

RAILWAY AGE

The End of 1932

The year 1932 ends today. It is a good riddance. In an economic sense it has been probably the worst year in the history of the United States. The volume of production and commerce has been almost 50 per cent less than in the peak year 1929. The riches of most of the rich, after three years of depression, have been mostly or entirely wiped out. Agriculture has been almost prostrate. Millions normally employed in industry have been unemployed and in want.

It is gratifying to be able, at the end of this terrible year, to cite evidences that the tide is turning. In June, July and August railroad freight car loadings, the best single measure of total production and commerce, were 54 per cent less than in the corresponding months of 1929. Throughout the fall and winter months, although general business has continued to be very bad, its trend, as measured by freight car loadings, has been upward, and there seems to be reason to hope and expect that this upward trend will continue in 1933. With conditions what they still are, however, it is but too plain that to cause business to continue to improve, and finally to restore prosperity, will require the exercise of sound sense, intelligence, energy, courage and cooperation by leaders in public life and in business and by every class of the people.

A Time for National Humility

Our problems may well be approached with deep humility, because the developments that have occurred within the last decade, and especially within the last three years, probably reflect more discredit upon almost every class of the American people than those that ever occurred in any other equal period in their history. Ten years ago we were recovering from a period of depression and entering a period of revival of great promise. General conditions at that time, somewhat more than four years after the end of the Great War, were so favorable that for seven years afterward, while many other nations were in distress, most of the people of this country enjoyed what seemed to be unprecedented prosperity.

In spite, however, of our vast material advantages and of our self-acknowledged superiority of intelligence, we engaged in the greatest saturnalia of reckless government and private expenditures and of speculation that ever occurred on earth. Almost the only kind of leadership our people had in public or private

life during this period was leadership that encouraged them to try to tax, speculate and spend themselves rich. Those who should have been their leaders in educating themselves and adopting sound public and private economic policies incited them to follow exactly the opposite course, and sought to take advantage of their folly to enrich themselves. The industrial, commercial and financial debacle which began three years ago was the result, and most of the blind leaders of the blind were buried in the ruins with their victims.

During the three years of depression that have ensued those who showed the lack of economic intelligence and the economic foolhardiness that finally destroyed the nation's prosperity, have shown almost an equal lack of economic intelligence, and almost none of the fairweather courage, that they showed in getting us into trouble. High and low, whether in public or private life, most of us seem to have been stricken with a paralysis of both our minds and our morale. Most public men have been playing the fiddle of politics while, economically speaking, the nation has been burning. Most business men have been waiting for everybody else to do something to "improve conditions," and complaining because they did not do it. Most labor leaders have been seeking six-hour day legislation to increase the expenses of industries that have not enough earnings to pay operating expenses at current rates of wages. Numerous classes have been seeking gigantic subsidies from public treasuries already exhausted because of the present inability of the people to pay enough taxes to balance local, state and national government budgets. And so the depression has dragged its weary length along, with conditions growing steadily worse, from October 1, 1929, to September 1, 1932.

The Problems of 1933

Now we face 1933. What are we all going to do this year? It is a striking illustration of the continuing economic illiteracy and imbecility of the American people that the country is being flooded with the literature of the cult of Technocracy, and that it is being eagerly read and discussed. History continues to repeat itself. Prosperity causes reckless government and private expenditures and speculation. These cause depression, destruction of incomes and property values, and unemployment. These breed fanatics and quacks

who peddle nostrums that disregard all economic experience and every economic principle. Desperate, ignorant people in one crisis widely accept the patent medicine of free silver, and in another gulp down the patent medicine of Technocracy. Forty years ago we were told that we could be saved only by repudiating our debts with fiat money. Now we are told we can be saved only by reducing hours of work, limiting production, and abolishing the "price system" in order that we may not be overwhelmed with so much food, raiment and shelter that we shall have to go hungry, unclothed and unsheltered. While the technocrats proclaim the failure of the "price system" as the main cause of our economic collapse, they significantly avoid suggesting in intelligible language any substitute for the only system of exchange that ever has served since barter became impracticable.

Meanwhile, what are those who have some economic intelligence, and ought to have some courage, going to do in 1933? The outstanding problems that must be solved in order to restore prosperity are well known. First, local, state and national government budgets must be balanced by sufficiently reducing government expenditures to make it possible for taxpayers to pay them. Second, the budgets of business concerns must be balanced by making their expenses less than their earnings if their earnings cannot be made more than their expenses. Third, employees must consent to work for what employers can afford to pay if employers cannot afford to pay what employees think they should receive. Fourth, a balance must be re-established between the purchasing power of farmers and other producers of raw materials and of producers of transportation services and manufactured goods, either by reducing the cost of transportation and manufacturing or by increasing the price of producers of raw materials. Fifth, credit facilities for those who need credit to do business must be provided by banks and other financial institutions, even at some risk to these institutions, if bankers as well as those who need credit are going to be able to stay in business.

Will Our "Leaders" Lead?

The solution of these problems is, as we have said, going to require the exercise of good sense, courage, intelligence and a spirit of co-operation by all classes of people, high and low. If others are going to show these qualities they will have to be given able and courageous leadership by men in public and private life who have accepted and hold positions which they can show they are fit for only if by showing they are willing to do the work, take the risks, and, if necessary, make the sacrifices required of real leaders. The people must be led. They must be educated regarding the nation's economic problems, through every possible channel and in every possible way, because, unless educated, they cannot be led along safe paths to the destination of prosperity.

Have those who should be their leaders the brains and courage to say the things, do the work and spend the money necessary to carry on the war for sound

policies in government and business that must be carried on if the widespread propaganda for unsound policies is to be defeated? The people can be led to the destination of prosperity only by men who do not seek merely their own political preferment or private profit, but by men who have enough economic intelligence to recognize the fact that the prosperity of all industries must be restored if the prosperity of any is to be restored, and that mere self-seeking leadership in any industry will merely delay the restoration of prosperity in that and every other industry.

One of the most acute of all our problems is the railroad problem, because the railroads are not only confronted, as other industries are, with conditions due to the depression, but are having the danger of their ruin greatly increased by the most unfair, government-aided and cutthroat competition to which any industry in this country ever was subjected. It is not enough for the solution of this problem for public men, business men and labor leaders piously to concede that the railways have been and are being very badly treated and are in bad shape, and that something ought to be done about it. Legislation should be promptly passed by the national and state governments which will give the railways, as far as fair legislation can, equality of opportunity with their competitors. The railways must be enabled to make passenger and freight rates which, under changed economic conditions, traffic can bear. To this end railway wages must be reduced to a level comparable with the reduced incomes and wages prevailing, or which may prevail in future, in other industries. If the railways are to stay in business their budget must be balanced, as must the budgets of our governments and of other industries. In other words, our railroad problem, like all our other great problems, must be removed from the field of polite and futile discussion to that of definite action, if any real progress toward its solution is to be made.

Why Depression Has Continued

The present depression has been due to causes similar to those of other depressions, and it has been so protracted and deepened because of the lack, in high places and in low, in public and private life, of the intelligence and courage to tackle the economic readjustments required to terminate it. Probably never in the history of the country was so much cowardice shown by those from whom courage was needed in saying and doing the things that ought to be said and done. Statesmanship has sunk to the level of the meanest intelligence and selfishness. Most financial and business leaders have acted as if they were completely cowed by the abundant evidence of their own mistakes and as if fearful to do anything more lest they would make more mistakes. The millions who pay taxes have thus far tamely allowed themselves to be beaten in almost every contest by those who live upon taxes. Most of the American people seem to have gone so soft, in an era of joy riding, moving movies and howling thousands at foot ball games, that they have become unable to even face, must less struggle against, stern realities.

In a period of the hugest expenditures for education ever known we seem to have become almost completely uneducated in regard to the things necessary to running our businesses and making a living.

If there ever will be a day when we should all resume the old practice of making New Year's resolutions, that day will be tomorrow—and if we all make all of them that we should, and carry them out, we will all have a mighty busy New Year's day and a mighty busy 1933; and if we do these things we won't spend much of the new year as we have spent most of recent years, either.

Uniform Boring of Ties

Like many other railway supply companies, the producers of crossties can look only to the railways for their market. The railways are to all practical purposes their only customers. The railways must, therefore, bear all costs of operation and a reasonable profit if they are to be assured of adequate supplies of ties when they need them. They have a very direct incentive, therefore, to co-operate with those who produce their crossties in every practicable and reasonable way that will lower the cost of production and improve the quality of the finished product.

One of the most difficult problems confronting a tie producer arises from the varying requirements of different railways. In part, this is due to differences in traffic and other fixed conditions; in part, it is also the result of conflicting opinions of officers of the different roads. In part, this latter variation was eliminated several years ago through the formulation by the American Railway Engineering Association of a standard specification for crossties which set up uniform sizes and fixed tolerances as to dimensions, defects, etc. These specifications, so far as followed, have promoted uniformity in production.

In recent months, however, the marked reduction in railway buying has left many ties in the hands of the producers. Normally, these producers treat these ties when they are properly seasoned and they can then hold them in their yards indefinitely awaiting sale. Of late years, however, a new difficulty has arisen by reason of the growing tendency of the roads to require that their ties be bored for spiking before treatment. This added operation imposes little hardship except for the fact that there is no uniformity in the location of the spiking holes in the tie plates, which the boring of the ties must match, with the result that a tie bored for one road may not fit the tie plate punching of another road. The result is that a tie producing company that desires to treat ties held in stock awaiting sale to prevent their decay must either bore the ties for one arrangement of spiking and take a chance of selling the ties to a road using that particular spacing, or forego the benefit of pre-boring at all. Either alternative is objectionable.

To correct this situation, the Railway Tie Associa-

tion has appointed a committee of three, two of whom are prominent railway officers, to study this subject and determine the possibility of securing the adoption of some standard plan for boring ties which will be acceptable to all or to at least a majority of the roads. This objective has much to commend it. It deserves the hearty support of the railroads.

Faster Freight Train Operation

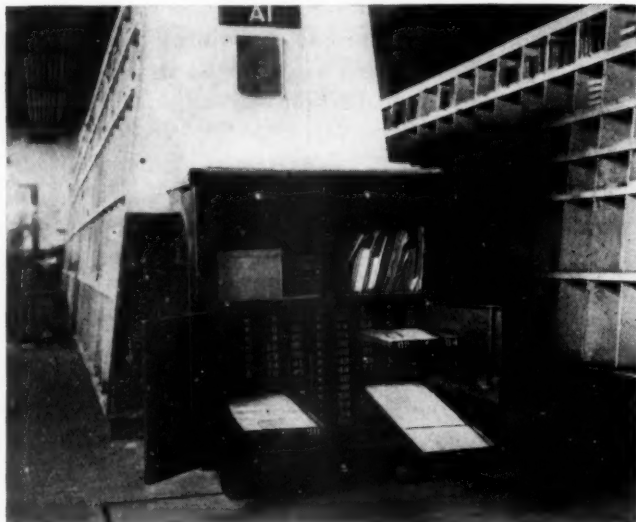
"There isn't a single slow freight train left on our railroad." This statement, recently made by an operating officer of a middle western railway and substantiated by examination of the road's train records, expresses simply and concisely the most striking and far-reaching improvement in railroad service which has ever been made. The "drag freight" is rapidly becoming a thing of the past, while fast freight schedules have been and are being applied to the movement of even coarse non-perishable commodities. Furthermore, this speeding up of all freight train operations is not a local development but an improvement of national scope.

Some weeks ago, in connection with the preparation of the December 3 issue of *Railway Age*, the editorial department had occasion to address an inquiry to the operating departments of a large number of railways to determine the extent to which the railways in recent years have reduced the time in transit of all kinds of freight through the speeding up of train schedules. The response from railways in all parts of the country was not only gratifying but arresting in its disclosures. The responses to our inquiry showed that full days have been cut off the schedules of freight trains operating over considerable distances, and that the schedules of freight trains operating only a few hundred miles have been reduced by many hours.

What has made possible the cutting in half, in many cases, of the time required to move freight by rail from one city to another? Probably the fundamental enabling factor has been the readiness of railway officers and employees to adapt themselves to the new conditions in the transportation business which make speed, and still more speed, the primary consideration in the routing of traffic. Secondly, the railways have had at their command facilities for fast freight transportation, the full capacity of which they had never before called upon. There are plenty of instances of railways now doing things which only a short time ago many of their own officers thought to be utterly impossible. This leads to the conclusion that fully as important as the improvement in freight train service is the present disposition of their officers and employees to call into daily use the full power of their equipment.

Freight train schedules even faster than those of today are readily possible. New methods—particularly those designed to reduce terminal delays—will bring some further acceleration. New equipment and better use of existing equipment will do the rest. And the end—increased traffic—probably will justify the means.

C. N. Stores Control Methods Stand Time Test



Visible Stock-Record Equipment
on the Grand Trunk Western

AFTER nine years' experience, stores officers of the Canadian National have lost none of their enthusiasm for bin record cards, bin pricing and a visible card system of permanent stock records. Instead, this three-cornered system, which, taken together, has no exact counterpart on any other railway, is claimed to have been a factor of much importance in effecting a reduction of 65 per cent in the money tied up in unapplied material on the Grand Trunk Western since 1923, and similar reductions on the other lines of the Canadian National. It is also said to be proving of special help at present in operating the stores with curtailed forces.

A Record at Each Bin

The bin or shelf cards get their names from the fact that they provide a record of stock which is maintained at each bin where material is stored. They are made of light-weight cardboard, 3 in. wide by 4 in. long, with a space across the top for the name of the item and the price, and vertical columns in which to show the number of items in stock, the number of items received and the number of items issued whenever a movement in the stock occurs. Inside the storehouses, the cards, one for each kind of material, are kept in metal slides fastened to the inner surface of the side walls or top of the bins or shelves, whichever is most convenient, the idea being to keep the cards adjacent to the material. Since weather and other conditions make this impracticable for outside material, the cards for such items are placed in open-top tin boxes, which are kept in the offices where the stockmen are located. It is the duty of the stockman to make a notation on each card whenever items are added or taken from the stock, showing, in each case, the quantity added or subtracted, and, at stock-taking points, or the end of the month, the new balance is noted. This process is continued until both sides of the card are filled, when the old card is replaced. The stockman is required to check the card against the material periodically and to identify the certified balances with a check mark.

Bin pricing is the arrangement by which the prices of the materials issued by the stores to fill requisitions received from all sources are taken from prices marked

Popularity of card records for keeping stock unimpaired after nine years of service on Grand Trunk Western

on the shelf cards and applied to the requisitions by the stockman who handles the material, and is contrasted with the practice of performing the pricing operations in the storekeeper's offices from price books, where clerks have had no experience with material and, in many cases, have difficulty identifying material. The unit prices of the material are computed in the storekeeper's office and are posted by the stockman in the upper right-hand corner of the shelf card by erasing or crossing out the old price and inserting the new figure. The latest invoice price, reduced to a unit, is used except with items where an average price or a price in some other unit is required. For example, rough lumber is priced on the basis of 1000 ft.

Cards for Permanent Records

The visible scheme of permanent stock records is employed by the road in the place of stock books. This system uses flexible cards 5 in. wide by 8 in. long. A description of the material is printed across the top of each card where spaces are also provided in which to show the quantity on hand at annual inventory, the unit price and the total value. Below this is shown the purpose of the material, the class number and also the number of the section of the store and the bin in which the material is stored. Each side of the card is ruled to provide a monthly record of the stock for two years, showing the quantity on hand each month, the quantity due and the quantity received. Above this record are spaces in which to report the issues made in each month of the two-year period, with the accumulated totals for three months, six months, nine months and twelve months, while provision is made at the bottom of each card to show the average monthly consumption, the surplus and the minimum amount of stock to be maintained, as well as instructions governing the movement or disposition of the stock.

These cards, up to 65 in number, are hinged to metal panels so that they normally lie flat and expose only that part of the card showing the description, the rest of the card being reached by swinging back the overlapping cards. These panels are stencilled at the end with a number of the class of material considered and are carried in steel cabinets, one cabinet for each section of the stores in charge of a stockman. The larger cabinets have drawers and shelves and a flat top for desk use, and are equipped with casters so that they can be moved from bin to bin as monthly stock or annual inventory is taken. The trays can also be removed from the cabinet for separate handling.

Colored Markers for Surplus

Completing the visible record is a system of colored cards and markers, each imparting special information

about the material. A blue card, equal in size to the yellow panel cards, is employed as a divider between different classes of material where cards for more than one class of material are contained in a panel. In the center of the exposed edge of each panel card is a hole, $\frac{1}{8}$ in. in diameter, and a pink card inserted behind the panel card so that the color shows through the hole indicates that the item is to be supplied by manufacture or repair in the company shops. On the other hand, a green card inserted behind the panel card so that the color shows through the hole indicates that a purchase order is to be placed to replenish the stock of the item so marked. The panels are taken to the stockkeeper's office after the pink and green cards have been inserted, where the requisition clerks note only the panel cards so marked when preparing requisitions for new material.

Five other markers are employed to show the condition of the stock, each consisting of a clip about $\frac{1}{2}$ in. square which is attached to the visible edge of each panel card. If there is a surplus, a yellow clip is attached to the card. If a surplus has been reported to the general storekeeper, a red clip is used. If material has been in stock for a year or more and, after being investigated again, is being held at the request of the consuming department, a black clip is attached to the card. On the other hand, a brown clip on a card indicates that the material was ordered specially, but not called for, while a gray clip indicates that the material consists of specially-ordered items which have been reported to the stores accountant and which is embodied in a statement sent quarterly to the vice-president of the department ordering the material. All the markers on the panel cards remain in place until the stock is normalized, during which time it is the duty of the supervisory officers to make periodic investigations to promote the disposition of the surplus.

Incident upon the curtailment of forces caused by the depression and the temporary impracticability of relieving the stores of this material, the equipment of stock control and stores operation was recently enlarged upon by introducing a blank red card of the same size as the shelf cards and placing these with the shelf card in every bin. If material has been inactive during the current month, the holder will contain the red card, thereby making it unnecessary for the stockkeeper to spend time studying the material during the month or considering the item when taking monthly inventory. As soon as the stock again becomes active, the red card is removed.

Canadian National officers point out that it is not only

desirable to have a system of stock control that will maintain interest, facilitate the work and develop a feeling of responsibility in the local forces down to the stockman but which will also facilitate the work of system officers who have too large a territory to be able to spend undue time at each point studying physical conditions of thousands of different items of stock and who are constantly confronted with the need of developing quickly various information about the stock. The problem of control on the Grand Trunk Western, where the visible card system was first installed, is indicated by the figures in the table on the next page showing the number of items and the location of the material in June, 1932.

The bin cards, particularly those employed inside the store, are said to require but a moment of the stockman's time to mark, and serve several ends. The possibility of a local or general stores officer appearing at any moment and checking the quantities of material in the bins with the shelf cards encourages the stockman to watch the material closely and the convenient record, which the shelf card gives each movement of the stock, is considered a further aid in stock control by providing a constant reminder of the conditions in each bin. It gives the supervisor a quick check on the attentiveness of the stockkeeper and contributes to a rapid and intelligent study of those items of material which the local storekeeper and the visiting shop officer or assistant supply officer question as they pass through the stores.

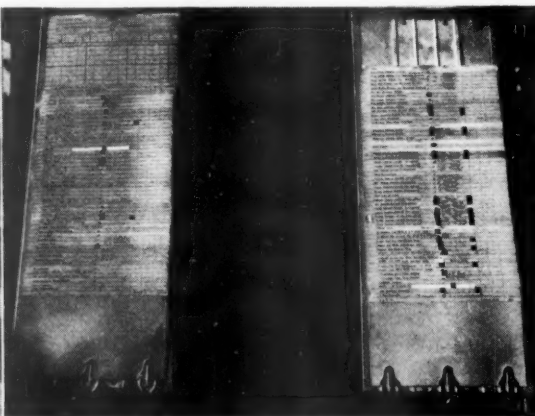
The purposes behind the shelf card are not fully met where outside material is concerned because of the impracticability of posting the cards adjacent to the material. In these sections, appearances indicate less promptness in posting movements of stock on the cards and less frequency in checking the actual material on hand, but they are in constant use by the stockkeepers. They are almost always referred to when shop men inquire at the storekeeper's office for information about the quantities of materials available. In connection with both inside and outside materials, the cards dispense with the time necessary to count or weigh the material in the bins at monthly inventory periods as this work is performed throughout the month in the stockkeeper's spare time.

More Accurate Pricing

Since the bin or shelf cards are marked with the price of the material, they enlist the service of the stockmen who handle the material in detecting irregularities or inaccuracies in prices, and are said to promote economy in the use of material as a natural consequence of the im-



Taking Inventory at Battle Creek, Mich., by Transferring Balances from Shelf Cards to Panel Stock Cards



The Stock Cards in Panels, the Black Dots being Colored Markers on the Cards Indicating Surplus



The Shelf Cards for Outside Materials are Kept in Tin Boxes—Stockman Pricing Requisitions

partments, and 6 yellow markers indicating unreported surplus. Another panel containing 55 cards on pipe fittings carried 16 green and 1 red marker, while a third panel containing a record of 55 items of engine forgings carried 16 red, 12 black and 3 yellow markers.

Speeds Annual Inventory

The panel-card arrangement is especially popular at annual inventory periods by eliminating a great deal of

C.N.R. 4418
12-28

STOCK BOOK FOLIO 78

SEC. A COMPT. NO. 9 BIN NO. 57

ARTICLE Hose Cold Water
Light Duty 5/8" M-46
Gardens Stations, etc.

CLASS 46 PRICE 18.37

DATE	ON HAND	ORDERED	REC'D	ISSUED
1928				
July	30	250 2236	150 250 1844 2236	110 65 75
Aug	180	150 2640	150 2640	80 10 100 30
Sept	130	100 3120	100 3120	50 50 20
Oct	180			
Nov	110			30 25 25
Dec	80	50 780	50 780	
1929				
Jan	30	200 783	200 783	75 30 25
Feb	80			
March	130	100 1224	100 1224	20 30 10

A Sample Shelf Card Showing a Record of Each Change in Stock, the Figures Above Each Cross-Line Representing the Quantity Ordered or Received and Those Below, the Order Number

time ordinarily required in preparing lists of the material on hand. A short cut is accomplished by photostating the panel cards. The procedure at inventory time is to count, weigh or measure each item of stock on hand and mark the bin or shelf card in blue pencil. As soon as a section is completed, the stockman passes through the section and transfers the true balance and the latest unit price from each bin card to a space in the right-hand corner of the panel cards, on the same line with the description of the item, this space being reserved for the annual inventory record and forming a part of the visible data of each panel card while lying flat in the panel.

After the panels are completed, they pass to a computer operator who computes the total value of each item of stock on hand and enters it on the panel card opposite the unit price. A blank card carrying the total for each panel and the storekeeper's certification of the stock on hand is attached to the bottom of each panel and the panels in sets of three are then photostated. After being trimmed to size, the prints, which are numbered serially, are bound with a photostatic copy of a summary statement and are submitted with typewritten records of materials received and not invoiced, and material invoiced and not received, etc., as the annual inventory.

It has been estimated that the work of bringing the panel cards up to date every month requires less than a minute per card, while the cost of maintaining the panel card system, considering the cost of the cards, the panels and the labor of preparing them for use, amounts to approximately 1.7 cents per item of material less than the corresponding cost of maintaining stock books. This saving does not consider the economies resulting from the actual use of the card system.

By dispensing with the transcribing and typing of the descriptions, quantities, prices and values of the materials and the checking of typewritten sheets, as well as the pricing of the inventory, this system has made it possible to prepare an inventory of 20,000 items of stock having a value of \$360,000 and of placing it in the hands of the auditing department in 15 days, as compared with a period of from 40 days to two months previously required when the road used stock and price books. The system was installed and has been perfected under the general direction of L. C. Thomson, manager of stores of the Canadian National.

Federal Barge Line Property Valued at \$7,000,000

WASHINGTON, D. C.

A TOTAL of \$7,000,000 as the fair "commercial" value of the properties being operated by and experimented with by the Inland Waterways Corporation, for which the investment and estimated original cost figures are stated as exceeding \$24,000,000, has been recommended to the Interstate Commerce Commission by its Bureau of Valuation in a proposed report made public on December 20. The report is made in response to a request by the Secretary of War for an appraisal in accordance with the terms of the Inland Waterways Corporation act, which the report finds calls for the value of the property for purposes of sale or lease, rather than a value for rate-making purposes. The recommended figures for commercial value are based on a consideration of the past and probable future earning power, considering the facilities on the Mississippi river and its tributaries as one unit and those on the Warrior river and its tributaries as one unit.

For the property of the Inland Waterways Corporation assigned to service on the Upper and Lower Mississippi divisions, the report recommends that the commission find a commercial value of \$6,500,000, and for the common-carrier property owned and used by the Warrior River Terminal Company a commercial value of \$500,000 is recommended, while it is stated that no more than a nominal commercial value can be assigned to the Warrior river division. The figures are reached after consideration of the fact that the upper river and Warrior river divisions show consistent deficits while the lower Mississippi river division has shown some net earnings. The ascertainment is as of February 29, 1932.

The value found for the Mississippi unit is about half-way between the sums produced by a capitalization at 6 per cent of the net revenue for 1931, an average year, and that for 1926, the most prosperous year, after deductions for taxes, rentals, and a major share of the expenses of the Washington office. That for the Warrior River Terminal Company is based on consideration of various factors including appreciation, depreciation, going concern value, and other matters. The cost of reproduction

less depreciation of its owned property is placed at \$1,340,884.

The values are recommended by the Bureau "subject to revision in the event of different or more complete information than now in possession of the Bureau."

The investment in real property and equipment, including land, as of February 29, 1932, is stated in the books of the corporation as \$23,354,822, which the Bureau report corrects to \$23,234,958. The original cost, it is stated, cannot be determined because of insufficient records, but the cost as recorded in the real property and equipment account, with certain modifications, is estimated at approximately \$22,751,210. This excludes land and rights for which the cost is not definitely ascertainable, as well as improvements to leased property. The cost of reproduction new of the property owned is placed at \$23,292,297 and the cost of reproduction less depreciation at \$16,678,533. In the general balance sheet of the corporation the reserve for accrued depreciation is carried as \$3,014,219.

For the Warrior River Terminal Company the book investment was \$1,253,227 and the original cost was estimated at approximately \$1,446,678.

The authorized capital stock of the Inland Waterways Corporation is \$15,000,000 par value and it had issued to February 29, 1932, stock to the amount of \$12,000,000, all subscribed for by the United States. It had also recorded long-term debt incurred to the amount of \$12,449,047, making a total of \$24,449,047. The long-term debt is subdivided in the accounts as obligations for long-term advances received, \$11,958,561, and donations received, \$490,486. These amounts include the appraised value of the net assets transferred to the corporation from the Secretary of War and also services and supplies and equipment transferred from other government departments. The property acquired from the Secretary of War under the act of June, 1924, at the time of the incorporation of the corporation, is included in the investment account at \$9,349,715, and that turned over by the War Department in 1926 is included at \$1,756,264, the amount of appraisals made by the American Appraisal Company at the time. The I. W. C. owns the stock of the Warrior River Terminal Company, \$1,250,000 par value, and operates its property, and it has made long-term loans to municipalities and corporations of \$714,347.

Extracts from the report relating to the results of corporate operations and the method and purpose of ascertaining the value are as follows:

Results of corporate operations.—For the period June 1, 1924, to February 29, 1932, the recorded revenues of the corporation derived from water-line operations aggregated \$44,124,196.56 and the recorded expenses of operation were \$43,525,307.99, resulting in net operating revenue of \$598,888.57. The operating income after deduction of tax accruals of \$4,314.53, was \$594,574.04. During this period rentals received and income from unfunded securities and accounts brought the gross income after payment of operating expenses and taxes to \$1,154,535.34. Deductions from gross income amounting to \$523,902.54, consisting of \$499,391.35 for rentals paid and \$24,511.19 for interest on unfunded debt, resulted in a recorded net income of \$630,632.80, transferred to credit of profit and loss. For the year ended December 31, 1931, the operations were conducted at a net profit of \$285,240.84.

An examination shows that, under the classification of accounts prescribed by the commission, certain items aggregating \$23,043.59, recorded in the profit and loss and other accounts, are includable in the income statement and certain other items aggregating \$66,164.29 should be deducted from income. If the income account were adjusted as indicated the credit balance transferable to profit and loss would be reduced \$43,120.70, to \$587,512.10.

The above statement of income reflects a credit item of \$482,691 for interest on bank deposits and on loans and notes receivable and debit items aggregating \$417,711.53, consisting of \$3,210.10 for interest paid on loans covered by short-term

notes and \$414,501.43 for the salaries and expenses of general officers, clerks and attendants in the Washington office, together with office supplies and other expenses of that office. The salary of the president, while charged to the expenses of the Washington office, is paid from the appropriations for the War Department. The above items, resulting in a net credit of \$64,979.47, are not included in the report of the corporation to the commission.

Value.—The Inland Waterways Corporation was created by Congress June 7, 1924, "for the purpose of carrying on the operations of the Government on inland, canal and coastwise waterways system to the point where the system can be transferred to private operation to the best advantage of the Government."

Paragraph (d) authorizes the Secretary of War, when he shall find that navigable channels and adequate terminals are substantially available and joint tariffs have been published and filed, "to lease for operation under private management, or to sell to private persons, companies, or corporations, the transportation facilities, or any unit thereof, belonging to the corporation: *Provided*, That for the purpose of this paragraph the facilities of the corporation on the Mississippi river and its tributaries shall be considered one unit, and those on the Warrior river and its tributaries as one unit: *Provided further*, That the facilities of the corporation shall not be sold or leased (1) to any carrier by rail or to any person or company directly or indirectly connected with any carrier by rail; or (2) to any person, company, or corporation who shall not give satisfactory assurance and agree, as part of the consideration for such sale or lease, that the facilities so sold or leased will be continued in the common-carrier service in a manner substantially similar to the service rendered by the corporation, together with ample security by bond or otherwise to insure the faithful performance of such agreement; or (3) until the same has been appraised and the fair value thereof ascertained and reported to the President by the Interstate Commerce Commission, and the sale or lease thereof has been approved by the President."

It is in pursuance of the above provisions of the Act that the Secretary of War has requested the Interstate Commerce Commission to ascertain and report to the President the fair value of the properties of the corporation used by it in transportation service.

From the terms of the Act it is clear that the "fair value" to be ascertained and reported is the value of the property for purposes of sale or lease,—in other words, its commercial value. A value for such purposes may be, and generally is, different from a value for rate-making purposes. The predominating consideration in the determination of the commercial value of property is the return which may be anticipated from its use as indicated by past operations and a forecast of conditions as they may be reasonably expected to exist in the future. Rate-making value, on the other hand, is value for the specific purposes of governmental regulation and is the amount upon which a carrier is entitled to earn, if it can, a reasonable return under rates fair to it and to the public. The element of earning power does not enter into its determination. The commission is here concerned only with the commercial value of the property.

As will be observed from the quoted portion of the Inland Waterways Corporation Act, the Upper and Lower Mississippi divisions must be treated as one unit. Neither division can be sold or leased to a private operator independently of the other. Because of the unfavorable showing on the Upper division the effect of this requirement is to diminish the commercial value which would otherwise be placed upon the more profitable lower division.

The records of the corporation show that in each year of its operation the Upper Mississippi division has failed to make its operating expenses. The loss over its entire period of operations to February 29, 1932, aggregated \$1,267,016 without consideration of its proportionate share of the expenses of the Washington office. In rendering the service on the Upper Mississippi division the corporation uses property which cost it approximately \$2,388,306 and which would cost \$2,175,399 to reproduce new, or \$1,906,936 with depreciation deducted.

Except for the seven-months' period of 1924, the Lower division has consistently earned in excess of its operating expenses. Its aggregate net operating revenue to February 29, 1932, was \$3,738,908. With rentals and taxes deducted this amount becomes \$3,355,954, exclusive of its share of the expenses of the Washington office, which for this period were \$414,501. If 75 per cent of the expenses in Washington were charged against the Lower division, the operating revenue less taxes and rentals would be reduced to a little over \$3,000,000. This sum is equivalent to an annual net revenue of approximately \$387,000, which capitalized at 6 per cent, would indicate a value for the Lower division of \$6,450,000, exclusive of the value of the property not in use. On February 29, 1932, the cost to the corporation of the property, except land and rights, owned and used by it in service on the Lower division, or held for future use, was \$16,900,925,

(Continued on page 980)

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Jay Street 300-hp. Diesel-Electric Locomotive Built by the American Locomotive Company

300-Hp. Diesel-Electric Locomotive Reduces Operating Expense

Jay Street Connecting Railroad operates locomotive in switching
service for one year of 6,258 hours at cost of
slightly over \$3,000

ON June 1, 1931, the Jay Street Connecting Railroad placed in service the first Diesel-electric locomotive equipped with the new Alco type solid-injection Diesel engine built by the McIntosh & Seymour Corporation, Auburn, N. Y. The locomotive, No. 300, was built by the American Locomotive Company at Schenectady, N. Y.

This railroad is along the Brooklyn waterfront on the

Principal Dimensions and Weights of the Jay Street Diesel-Electric Locomotive No. 300

Railroad	Jay Street Connecting
Builder	American Locomotive Co.
Service	Switching
Engine, Diesel	McIntosh & Seymour
Cylinders; number, diam. and stroke	6—9½ in. by 10½ in.
Horsepower	300 hp. at 700 r.p.m.
Generator, type	General Electric, DT-40
Traction motors, number and type	4—G. E.—297-A
Gear ratio	4.43 to 1
Maximum speed	40 m.p.h.
Tractive force, starting	38,500 lb.
Tractive force, 1 hr. rating, 2.8 m.p.h.	25,720 lb.
Tractive force, continuous, 3.7 m.p.h.	19,040 lb.
Weight in working order:	
Total	128,500 lb.
On driving wheels	128,500 lb.
Wheel bases:	
Rigid	7 ft. 6 in.
Total	23 ft. 2 in.
Wheels, diameter outside tires	38 in.
Axle diameter	7 in.
Journals, diameter and length	5½ in. by 10 in.

East river near the Manhattan bridge, New York. A connection is made to other railroads only by float service. The purpose of this railroad is to serve the various industries in that district, particularly the Arbuckle Brothers Company which owns the railroad. This Diesel-electric locomotive has now been in service 18 months, 9,541 hours, and during that time has established a satisfactory record.

One of the tables shows the fuel and maintenance costs of the locomotive. The period covered is one year of 6,258 hours, which averages 20 hours each day, 6 days each week. The maintenance shown does not include classified repairs which must be made every three to six years, depending upon operating conditions. The wages of the engineman and train crew are omitted. Only one man is required to operate this locomotive.

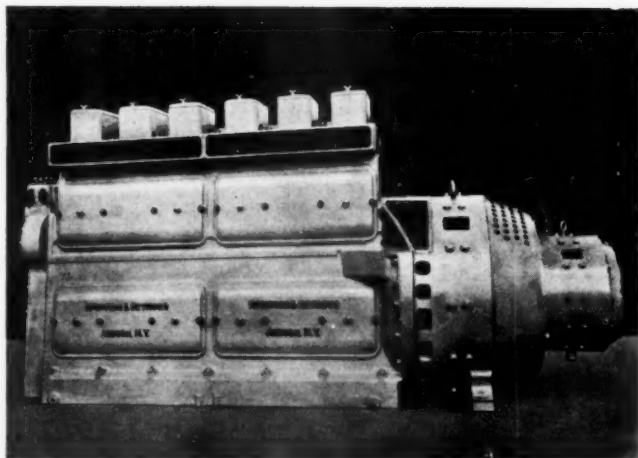
The Diesel engine is of compact design and light in weight. All running parts are enclosed, including the overhead valve mechanism. This feature together with

Operating Costs of the 300-Hp. Diesel Locomotive No. 300 on the Jay Street Connecting Railroad

	One hour	One year, 6,258 hours
Fuel oil	\$1.171	\$1,064.46
Lubricating oil	.035	220.00
Miscellaneous supplies	.069	432.00
Maintenance—		
Running repairs	.245	1,528.00
Total	\$5.20	\$3,244.46

the use of force-feed lubrication throughout, makes for long service life and a reliable operating unit. The centrifugal water pump requires no manifold as it is secured directly to the cylinder block. The six cylinders are cast in one block, each having a removable liner. One fuel injection pump supplies each cylinder.

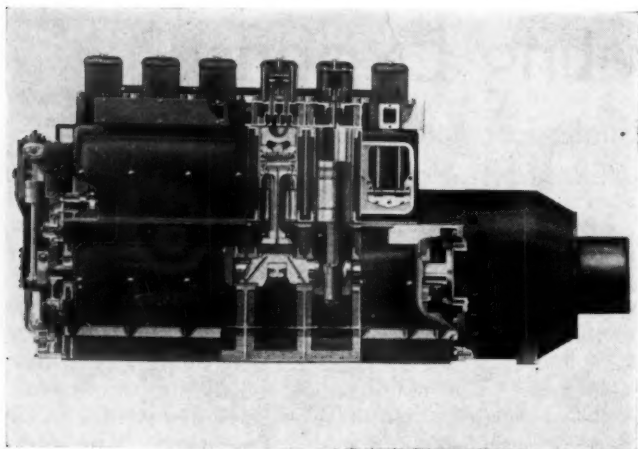
All wearing parts, including the engine bearings, valves, piston rings and pistons, are inspected at regular intervals. The monthly inspection on this locomotive requires an eight-hour period. The last annual overhaul period required three days, which was sufficient time to pull all the pistons, and to inspect the piston rings and



Left Side of the Engine and Generator Unit

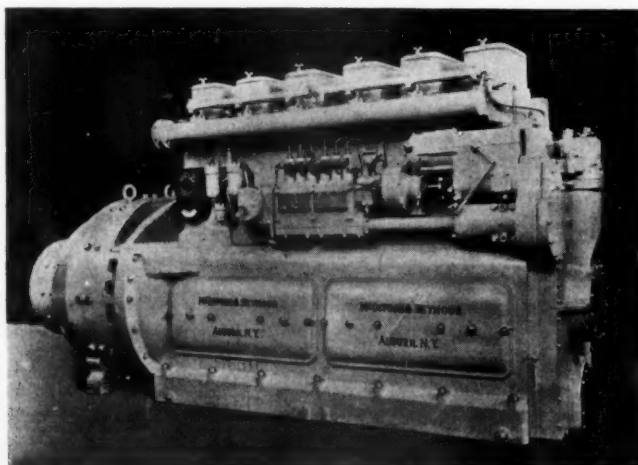
bearings. The builders do not anticipate that a classified repair will be required in less than five years in this type of service.

To operate this locomotive the engineman has the standard air-brake levers, engine-throttle lever and reverse lever. With the brakes off and the reverse lever



Phantom View of the McIntosh & Seymour 300-hp. Diesel Engine

in the forward or reverse position, the movement of the locomotive is entirely controlled by the throttle. It is impossible to stall the Diesel engine because both the engine governor and generator are specially designed for locomotive service. The engine governor does not allow



Right Side of the Engine and Generator

the engine to race or speed up under light loads, but holds the engine speed at the load demanded by the position of the engineman's throttle, thus keeping engine revolutions and thereby maintenance to a minimum.

The position of the reverse lever not only determines the direction the locomotive is to move, but also provides for an automatic transfer of the traction motors from series to series parallel. Four traction motors are used, one geared to each axle. The Diesel engine is started by a storage battery which supplies current to the main generator which acts as a starting motor. The electric equipment on this locomotive was built by the General Electric Company at Erie, Pa., and is similar to that used on the majority of Diesel-electric locomotives built by the American Locomotive Company in the past seven years.

Freight Car Loading

WASHINGTON, D. C.

As a result of an increase in coal traffic, freight car loading in the week ended December 17 came closer to the figure for the corresponding week of the year before than it has in any week since the depression began. The total was 516,796 cars, a decrease of only 4,420 cars as compared with the week before and a decrease of 64,374 cars, or about 11 per cent, as compared with the corresponding week of last year. As compared with 1930 the decrease was 197,069 cars.

Coal loading for the week, 144,758 cars, was 25,343 cars more than that in the preceding week and 24,939 cars more than that in the corresponding week of last year. Loading of coke and ore also showed increases as compared with the preceding week, but miscellaneous freight showed a decrease of 19,216 cars. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

	Week Ended Saturday December 17, 1932		
Districts	1932	1931	1930
Eastern	121,446	128,516	158,551
Allegheny	96,765	115,298	138,738
Pocahontas	40,301	36,666	44,260
Southern	80,202	90,094	111,968
Northwestern	59,537	66,751	83,984
Central Western	75,552	91,803	114,226
Southwestern	42,993	52,042	62,138
Total Western Districts.....	178,082	210,596	260,348
Total All Roads	516,796	581,170	713,865
Commodities			
Grain and Grain Products.....	25,589	28,412	36,053
Live Stock	17,173	21,133	22,747
Coal	144,758	119,819	161,503
Coke	6,671	5,446	8,492
Forest Products	11,989	18,151	31,318
Ore	2,122	4,223	5,743
Mdse. L. C. L.	160,112	191,924	210,278
Miscellaneous	148,382	192,062	237,731
December 17	516,796	581,170	713,865
December 10	521,216	613,621	744,353
December 3	547,461	636,366	787,072
November 26	493,882	558,798	701,050
November 19	575,851	653,503	779,752
Cumulative total, 50 weeks.....	27,293,469	36,207,623	44,565,927

THE PUBLIC UTILITY COMMISSIONERS OF NEW JERSEY, acting on a petition of the Pennsylvania, in connection with flashing light signals installed by that road at Bridge street, Stockton, has approved the location of these signals when erected in the center of the highway, holding that this arrangement affords suitable and proper protection. The commissioners approved the layout of these signals in July, 1925; but, on the petition of the road, has reopened the case to give specific approval of the location, which detail was not dealt with in the earlier approval.

Tables Show Marked Reductions in Maintenance of Way

Data prepared by Bureau of Statistics, I. C. C., compare operations in 1931 with corresponding figures for four preceding years

EXPENDITURES of individual Class I railways for maintenance of way and structures varied 4 per cent to 63 per cent less in 1931 than in 1929, according to a tabulation of comparative operating averages prepared by the Bureau of Statistics of the Interstate Commerce Commission, for the years 1927 to 1931, inclusive. A single exception to this rule is the Bangor & Aroostook, on which road the charges to maintenance of way and structures were 9.6 per cent greater in 1930 and 6.3 per cent greater in 1931 than in 1929.

Figures appearing in this statistical statement, as applied to 88 selected railways, are presented below in four tables as follows: The expenditures for maintenance of way and structures per equated track mile are given in Table 1; the expenditures expressed in per cent of railway operating revenues are shown in Table 2, and in per cent of railway operating expenses in Table 3; while the man hours of section labor per equated track mile are

given in Table 4. Equated track-mile as used in these tables is defined by the Bureau of Statistics "as a constructive figure to make results on various roads more nearly comparable. This item is based on a weight of 100 assigned to first main track, 80 to additional main track, and 50 to all other tracks, and it excludes all trackage rights." Obviously, it would be impossible to arrive at any workable unit that would insure a thoroughly fair basis of comparison to fit all of the variations in physical conditions encountered.

While the Bangor & Aroostook made an actual increase in expenditures, in 1931, the Boston & Maine made the greatest proportionate reduction in the New England region, compared with 1929, namely 41 per cent. In the Great Lakes region the Delaware & Hudson made the smallest relative decrease, 17 per cent and the Pittsburgh & Lake Erie the greatest, 60 per cent. Corresponding maximum and minimum ratings in other re-

Table 1—Expenditures for Maintenance of Way and Structures per Equated Track-Mile

	1931	1930	1929	1928	1927
Ban. & Aroos.	\$1,841	\$1,898	\$1,732	\$1,746	\$1,668
B. & M.	2,662	3,650	4,500	3,854	4,109
Cent. Vt.	2,450	2,692	3,254	2,571	4,343
Me. Cent.	1,735	2,148	2,151	2,192	2,447
N. Y., N. H. & H.	3,607	4,212	5,081	4,889	4,763
Rutland	1,874	1,985	2,426	2,740	3,097
New England Region	2,786				
B., R. & P. (B. & O.)	1,865	2,494	2,920	2,729	2,904
G. T. W. (C. N. R.)	1,988	2,474	3,220	3,606	3,524
D. & H.	3,166	4,325	3,813	3,523	4,224
D., L. & W.	2,733	3,264	3,683	3,830	3,950
Erie	2,708	3,200	3,658	3,687	3,901
L. & H. R.	2,272	2,701	3,236	2,768	4,233
L. & N. E.	2,043	2,379	2,329	2,442	2,478
L. V.	1,806	2,292	2,359	2,479	3,201
N. Y., O. & W.	1,644	1,706	2,254	2,312	2,525
N. Y. C. (incl. B. & A.)	2,490	3,326	3,831	3,709	3,971
P. & L. E.	2,203	3,883	5,462	5,678	6,111
N. Y. C. & St. L.	2,145	2,649	3,077	2,914	2,949
P. M.	1,755	2,058	2,154	1,896	1,899
Ann Arbor	1,070	1,304	1,812	1,716	1,833
Wabash	1,827	2,570	3,470	3,228	3,186
Great Lakes Region	2,302				
B. & O.	1,577	2,612	3,438	3,141	3,610
B. & L. E.	2,639	2,907	3,053	3,026	3,183
C. & E. I.	1,443	1,671	2,277	2,176	2,417
C. & I. M.	2,045	2,494	3,267	3,273	3,307
C. I. & L.	1,363	2,115	2,310	2,286	2,355
D., T. & I.	1,156	2,334	3,159	2,493	2,826
E., J. & E.	2,904	4,080	4,221	4,066	4,060
Long Island	4,313	5,862	6,806	6,859	7,148
Pennsylvania	2,568	3,559	4,595	4,473	4,613
C. R. R. of N. J.	2,933	3,868	4,518	4,590	4,269
Reading	3,415	4,945	5,256	5,414	5,560
West. Md.	1,801	2,361	2,854	2,713	3,371
W. & L. E.	1,912	2,569	3,498	3,483	3,262
Central Eastern Region	2,298				
EASTERN DISTRICT	2,355				
C. & O.	3,373	4,081	4,746	4,306	4,919
N. & W.	2,680	3,301	4,168	4,364	4,446
R., F. & P.	2,972	4,431	4,793	4,020	4,701
Virginian	1,966	2,380	2,718	2,592	3,325
Poconos Region	2,975				
A. & W. P.	1,828	2,078	2,976	2,724	2,514
A., B. & C.	1,118	1,333	1,489	1,424	1,685
A. C. L.	1,244	1,526	1,590	1,712	2,087
Cinchfield	1,671	1,868	2,001	1,913	2,657
Georgia	1,017	1,271	1,553	1,442	1,463
L. & N.	1,897	2,505	3,126	3,172	3,365
N. C. & St. L.	1,676	1,939	1,781	2,005	1,995
F. E. C.	\$1,033	\$1,275	\$1,655	\$1,820	\$2,886
G., M. & N.	895	1,512	1,625	1,956	1,837
C. of G.	765	954	1,470	1,374	1,561
I. C.	1,567	1,843	2,571	2,450	2,704
Norfolk Sou.	905	927	1,094	1,160	1,155
S. A. L.	1,335	1,375	1,398	1,324	1,530
M. & O.	1,298	1,942	2,231	2,178	2,307
Southern	1,965	2,208	2,867	2,739	2,680
Southern Region	1,519				
SOUTHERN DISTRICT	1,747				
M., St. P. & S. S. M.	805	1,197	1,329	1,399	1,315
C. & N. W.	1,422	1,704	1,956	2,090	1,998
C., St. P., M. & O.	1,289	1,724	1,855	2,244	1,967
C. G. W.	1,609	1,929	1,965	1,902	1,950
C., M., St. P. & P.	1,264	1,656	2,077	2,040	2,082
D., M. & N.	2,274	2,962	3,058	2,895	3,251
G. N.	990	1,430	1,801	1,927	1,579
M. & St. L.	800	962	1,094	1,233	1,301
N. P.	897	1,142	1,416	1,466	1,408
S., P. & S.	1,160	2,049	2,173	2,439	1,908
O.-W. R. R. & N. (U. P.)	1,422	1,881	2,117	2,288	2,150
Northwestern Region	1,185				
Alton	1,578	2,358	2,385	2,537	2,577
C., B. & Q.	1,170	1,731	2,076	2,174	2,019
C. & S.	1,061	1,425	1,850	1,829	2,450
Ft. W. & D. C.	1,020	1,624	2,071	1,865	3,675
C., R. I. & P.	1,134	1,610	2,151	2,064	2,003
D. & R. G. W.	859	1,222	1,737	1,969	2,164
A. T. & S. F.	1,400	2,088	2,532	2,556	2,747
S. P. (Pac. Sys.)	1,469	1,974	2,369	2,381	2,489
T., P. & W.	1,132	827	1,218	1,541	1,522
L., A. & S. L. (U. P.)	1,938	2,543	3,119	3,360	3,562
O. S. L. (U. P.)	1,273	1,625	1,841	1,793	1,833
U. P. R. R.	1,548	1,875	2,485	2,392	2,371
W. P.	1,734	2,137	2,609	2,757	2,581
Central Western Region	1,331				
K. C. S.	1,182	1,994	2,293	2,237	2,350
L. & A.	1,102	1,502	1,744	1,758	1,890
M.-K.T.	1,079	1,510	2,104	2,143	2,248
G. C. L.	1,412	2,290	2,323	2,339	3,155
I.-G. N.	1,764	1,816	2,158	2,175	2,480
M. P.	1,343	2,061	2,806	2,509	2,565
T. & P.	1,500	2,318	3,041	3,492	3,015
St. L.-S. F.	970	1,395	1,805	1,564	1,805
St. C. Sw.	983	1,677	2,712	2,530	2,529
G. C. & S. F.	1,115	1,890	2,614	1,961	2,603
T. & N. O.	1,316	1,704	2,055	2,066	2,317
Southwestern Region	1,202				
WESTERN DISTRICT	1,249				
UNITED STATES	1,670				

Table 2—Expenditures for Maintenance of Way and Structures in Per Cent of Railway Operating Revenues

	1931	1930	1929	1928	1927		1931	1930	1929	1928	1927
Ban. & Aroos.	20.3	17.1	16.0	18.2	16.9	F. E. C.	14.9	14.8	16.7	17.7	21.9
B. & M.	14.7	16.8	18.3	16.3	17.1	G. M. & N.	14.3	16.8	14.0	17.1	16.9
Cent. Vt. (C. N. R.)	18.4	17.4	18.6	17.1	27.9	C. of G.	10.3	10.4	13.5	12.6	13.0
Me. Cent.	15.4	14.9	14.0	15.1	16.1	I. C.	12.3	11.5	13.1	12.6	13.5
N. Y., N. H. & H.	13.9	14.0	14.1	14.0	13.6	Norfolk Sou.	15.7	14.0	14.1	13.2	12.6
Rutland	19.8	18.0	18.6	19.8	23.9	S. A. L.	16.4	14.4	12.5	12.0	12.4
New England Region	15.0					M. & O.	15.0	16.1	15.0	14.5	14.8
B. R. & P. (B. & O.)	11.5	12.8	12.9	12.6	13.0	Southern	16.2	14.7	15.7	15.0	14.3
G. T. W. (C. N. R.)	16.2	15.0	13.7	11.8	12.4	Southern Region	14.7				
D. & H.	13.5	15.3	12.3	11.7	13.3	SOUTHERN DISTRICT	14.0				
D. L. & W.	9.7	9.7	9.4	9.8	9.6	M. St. P. & S. S. M.	13.8	14.8	13.5	13.8	13.2
Erie	12.5	12.2	11.7	12.2	13.1	C. & N. W.	15.6	14.8	14.2	15.4	14.8
L. & H. R.	11.8	12.5	12.7	10.3	13.2	C. St. P. M. & O.	15.0	15.3	14.8	18.0	15.9
L. & N. E.	13.1	12.4	12.1	12.0	11.1	C. G. W.	13.9	14.7	13.2	13.2	13.8
L. V.	9.3	9.8	8.5	8.9	11.2	C. M. St. P. & P.	15.3	15.7	16.3	16.1	17.2
N. Y. O. & W.	11.3	12.8	14.4	14.3	15.0	D. M. & N.	20.1	13.7	10.7	11.9	14.3
N. Y. C. (incl. B. & A.)	12.7	13.5	12.6	12.6	13.4	G. N.	12.2	13.0	13.6	14.5	12.6
P. & L. E.	9.2	10.6	11.9	13.5	14.4	M. & St. L.	13.3	12.9	12.7	14.6	15.4
N. Y. C. & St. L.	13.5	13.1	12.4	12.5	12.5	N. P.	12.5	12.3	12.6	12.4	12.5
P. M.	16.7	14.4	11.6	10.7	11.0	S. P. & S.	11.7	16.1	14.2	16.0	13.1
Ann Arbor	9.8	9.5	10.6	10.4	11.8	O-W. R.R. & N. (U. P.)	16.6	17.1	16.4	17.4	16.7
Wabash	11.0	12.3	13.4	13.4	13.9	Northwestern Region	14.5				
Great Lakes Region	12.3					Alton	12.1	14.0	11.9	12.8	13.0
B. & O.	8.5	10.9	12.0	11.4	12.6	C. B. & O.	12.3	14.4	15.0	15.7	15.1
B. & L. E.	13.4	8.8	7.6	8.3	10.4	C. & S.	14.1	14.8	16.2	16.0	20.8
C. & E. I.	12.6	11.2	11.9	11.6	11.9	Ft. W. & D. C.	9.9	13.4	13.0	12.4	17.7
C. & I. M.	10.5	11.0	14.7	16.1	24.1	C. R. I. & P.	11.1	12.4	13.7	13.6	13.3
C. I. & L.	9.7	11.3	10.1	9.7	9.9	D. & R. G. W.	11.5	13.0	15.6	18.6	20.4
D. T. & I.	11.6	13.5	13.5	12.9	18.4	A. T. & S. F.	13.1	15.5	15.5	16.3	17.2
E. J. & E.	14.1	12.3	10.0	10.2	10.3	S. P. (Pac. Sys.)	11.7	12.2	12.2	12.3	13.1
Long Island	9.2	11.4	12.6	13.0	13.5	T. P. & W.	18.3	10.9	13.9	18.5	22.2
Pennsylvania	11.1	12.0	12.9	13.2	13.3	L. A. & S. L. (U. P.)	14.1	15.0	15.2	18.1	18.7
C. R. R. of N. J.	9.5	9.6	10.0	10.1	9.3	O. S. L. (U. P.)	14.3	14.8	14.4	14.3	15.6
Reading	13.0	15.2	14.5	13.8	13.6	U. P. R. R.	9.5	9.5	11.2	10.7	11.3
West. Md.	13.2	14.5	16.0	15.4	15.0	W. P.	16.4	16.0	17.9	19.0	18.8
W. & L. E.	11.9	11.5	12.0	12.3	13.1	Central Western Region	12.1				
Central Eastern Region	10.8					K. C. S.	9.5	11.8	11.8	11.6	11.8
EASTERN DISTRICT	11.9					L. & A.	13.0	14.9	15.9	17.3	19.6
C. & O.	12.9	13.5	14.1	13.1	14.0	M-K-T.	11.6	12.0	13.8	13.9	14.7
N. & W.	12.2	11.8	12.6	14.5	14.2	G. C. L.	13.3	15.1	15.6	16.2	20.4
R. F. & P.	10.1	13.0	12.2	11.0	12.2	I-G-N.	13.3	15.9	15.6	15.2	17.7
Virginian	9.6	10.0	9.8	10.1	10.8	M. P.	12.3	14.9	17.4	16.4	17.4
Pocahontas Region	12.3					T. & P.	12.2	15.0	16.2	16.5	17.5
A. & W. P.	15.4	13.2	15.5	13.3	12.1	St. L.-S. F.	11.6	12.8	13.7	12.3	13.1
A. B. & C.	24.7	23.9	23.3	21.9	23.7	St. L. Sw.	10.9	15.3	20.0	18.2	19.2
A. C. L.	14.7	15.5	14.1	15.3	16.4	G. C. & S. F.	13.8	17.2	19.9	16.0	17.4
Clinchfield	11.2	11.3	10.7	10.1	12.2	T. & N. O.	15.8	15.3	15.4	16.5	17.8
Georgia	10.3	11.1	12.0	11.1	10.5	Southwestern Region	12.8				
L. & N.	14.9	15.2	16.0	15.6	15.4	WESTERN DISTRICT	13.0				
N. C. & St. L.	16.7	15.1	11.7	13.4	13.6	UNITED STATES	12.7				

Table 3—Expenditures for Maintenance of Way and Structures in Per Cent of Railway Operating Expenses

	1931	1930	1929	1928	1927		1931	1930	1929	1928	1927
Ban. & Aroos.	28.5	26.8	24.4	26.5	25.3	F. E. C.	20.4	20.1	23.8	24.9	27.2
B. & M.	20.1	22.9	24.2	21.7	21.6	G. M. & N.	17.4	21.7	20.3	23.7	23.4
Cent. Vt. (C. N. R.)	20.9	20.9	24.0	21.4	30.1	C. of G.	12.6	13.6	17.7	16.5	17.1
Me. Cent.	19.9	19.8	18.9	19.4	20.2	I. C.	15.2	15.0	17.1	16.5	17.4
N. Y., N. H. & H.	20.2	20.7	21.3	20.5	19.0	Norfolk Sou.	19.0	18.0	19.0	18.4	17.6
Rutland	22.1	21.2	23.1	24.5	26.7	S. A. L.	19.5	18.1	17.1	16.0	16.3
New England Region	20.7					M. & O.	16.7	19.4	19.5	19.1	19.7
B. R. & P. (B. & O.)	13.6	15.2	15.8	15.4	14.7	Southern	19.7	19.6	21.7	21.1	20.3
G. T. W. (C. N. R.)	17.2	17.9	19.2	17.8	17.8	Southern Region	17.8				
D. & H.	16.2	18.8	15.9	14.9	16.5	SOUTHERN DISTRICT	18.3				
D. L. & W.	12.3	12.9	13.3	13.7	13.5	M. St. P. & S. S. M.	16.4	18.8	18.6	19.0	18.2
Erie	16.0	15.7	15.5	16.0	16.1	C. & N. W.	18.8	19.0	19.1	20.1	19.0
L. & H. R.	16.6	17.3	18.9	15.6	19.3	C. St. P. M. & O.	17.0	18.2	18.3	21.2	19.6
L. & N. E.	16.7	16.6	16.3	16.3	15.9	C. G. W.	19.7	20.2	17.1	17.0	17.1
L. V.	11.4	12.3	11.4	12.0	14.0	C. M. St. P. & P.	19.1	19.9	21.7	21.9	20.9
N. Y. O. & W.	15.5	15.7	17.3	17.2	18.0	D. M. & N.	25.4	24.9	24.2	24.5	25.7
N. Y. C. (incl. B. & A.)	15.8	17.2	16.8	17.0	17.8	G. N.	17.0	18.7	20.6	22.0	18.9
P. & L. E.	10.6	13.4	14.3	16.5	17.4	M. & St. L.	14.7	15.2	15.8	17.0	17.3
N. Y. C. & St. L.	17.4	17.3	17.6	17.5	17.3	N. P.	14.9	15.8	17.3	17.8	17.6
P. M.	19.8	18.5	16.3	15.8	15.6	S. P. & S.	17.4	23.0	22.7	25.6	22.0
Ann Arbor	11.4	12.3	14.4	14.0	15.3	O-W. R.R. & N. (U. P.)	19.9	21.3	21.1	22.1	21.8
Wabash	12.9	16.1	18.3	18.1	18.2	Northwestern Region	18.0				
Great Lakes Region	15.2					Alton	15.0	16.6	15.6	16.3	16.6
B. & O.	11.3	14.7	16.3	15.6	16.6	C. B. & O.	17.7	20.5	21.9	22.3	21.1
B. & L. E.	17.6	13.9	13.8	14.1	14.5	C. & S.	18.1	19.5	21.5	21.4	25.1
C. & E. I.	13.9	10.2	15.3	14.8	14.8	Ft. W. & D. C.	15.7	19.0	20.4	20.0	26.0
C. & I. M.	13.7	14.4	18.8	20.7	20.1	C. R. I. & P.	14.7	16.9	18.7	18.6	18.0
C. I. & L.	12.2	14.9	14.1	13.6	13.5	D. & R. G. W.	16.5	18.7	22.2	25.3	26.9
D. T. & I.	16.5	22.4	23.5	20.7	22.9	A. T. & S. F.	18.0	22.0	23.8	23.9	24.5
E. J. & E.	16.6	17.2	15.5	15.0	14.7	S. P. (Pac. Sys.)	15.9	17.3	18.0	17.9	18.9
Long Island	13.8	17.2	18.8	18.6	18.3	T. P. & W.	22.2	14.5	18.7	24.6	25.3
Pennsylvania	14.1	16.0	17.8	17.8	17.3	L. A. & S. L. (U. P.)	18.8	19.9	21.2	22.7	23.2
C. R. R. of N. J.	12.7	13.0	13.7	14.0	12.6	O. S. L. (U. P.)	20.1	21.7	22.3	21.8	23.0
Reading	15.6	18.4	18.6	18.0	17.7	U. P. R. R.	14.1	14.4	17.2	16.8	17.4
West. Md.	20.3	22.2	24.0	22.5	21.9	W. P.	18.5	19.8	22.0	23.5	23.5
W. & L. E.	14.9	15.7	17.4	18.3	17.3	Central Western Region	16.6				
Central Eastern Region	13.9					K. C. S.	14.1	17.2	18.2	17.6	17.6
EASTERN DISTRICT	15.2					L. & A.	21.1	22.0	23.6	24.5	24.8
C. & O.	20.7	21.4	21.6	20.1	20.9	M-K-T.	16.2	18.3	20.6	20.2	20.9
N. & W.	19.2	19.8	22.5	23.3	22.5	G. C. L.	18.7	22.4	22.4	22.7	26.1
R. F. & P.	13.5	17.1	17.8	15.6	16.8	I-G-N.	18.1	18.7	20.0	19.5	21.8
Virginian	18.3	19.6	19.6	18.4	20.5	M. P.	16.6	20.1	23.6	21.8	21.9
Pocahontas Region	19.7					T. & P.	17.7	21.3	23.2	24.3	23.7
A. & W. P.	16.0	15.6	19.1	17.5	15.8	St. L.-S. F.	15.6	18.0	19.4	17.7	18.8
A. B. & C.	21.1	22.5	23.7	22.8	25.2	S. D. Sw.	15.5	19.8	25.7	24.0	25.1
A. C. L.	18.4	19.7	19.1	19.5	20.6	G. C. & S. F.	17.5	23.6	28.2	22.5	23.9
Clinchfield	17.1	17.0	16.7	16.5	19.0	T. & N. O.	19.7	20.5	20.9	21.0	21.7
Georgia	11.7	13.0	14.4	13.2	12.8	Southwestern Region	17.4				
L. & N.	17.9	18.5	20.2	19.9	19.8	WESTERN DISTRICT	17.2				
N. C. & St. L.	18.6	17.9	15.6	17.3	17.1	UNITED STATES	16.5				

Table 4—Man-Hours of Section Labor per Equated Track-Mile

	1931	1930	1929	1928	1927		1931	1930	1929	1928	1927
Ban. & Aroos.	1,872	2,117	2,038	2,125	2,128	F. E. C.	1,145	1,452	1,793	1,752	2,614
B. & M.	2,204	3,093	3,803	3,128	3,409	G. M. & N.	1,303	2,231	2,519	2,891	3,374
Cent. Vt. (C. N. R.)	2,076	2,102	2,479	4,615	3,634	C. of Ga.	786	1,038	1,692	1,715	1,825
Me. Cent.	1,657	2,137	2,143	2,209	2,463	I. C.	1,464	1,921	2,764	2,604	2,957
N. Y. N. H. & H.	2,214	2,490	3,175	2,654	2,991	Norfolk Sou.	934	956	1,128	1,380	1,477
Rutland	1,991	2,174	2,347	2,510	2,659	S. A. L.	1,781	1,992	2,050	1,957	2,189
New England Region ....	.....	.....	.....	.....	.....	M. & O.	1,605	2,182	2,444	2,365	2,533
B. R. & P. (B. & O.)	1,654	2,185	2,520	2,390	2,547	Southern	1,782	2,316	2,822	2,718	2,837
G. T. W. (C. N. R.)	1,544	1,729	2,454	2,833	2,836	Southern Region	1,611	.....	.....	.....	.....
D. & H.	2,646	2,941	2,920	2,820	3,556	SOUTHERN DISTRICT	1,756	.....	.....	.....	.....
D. L. & W.	2,369	2,822	3,335	3,358	3,443	M. St. P. & S. S. M.	719	1,098	1,278	1,435	1,367
Erie	2,209	2,675	3,307	3,296	2,854	C. & N. W.	1,215	1,712	2,093	2,080	2,239
L. & H. R.	1,595	2,054	2,543	2,502	4,177	C. St. P. M. & O.	1,147	1,612	1,559	1,750	1,682
L. & N. E.	1,475	1,719	1,708	1,898	2,041	C. G. W.	1,520	1,786	2,007	1,870	1,993
L. V.	1,856	2,391	2,681	2,712	3,156	C. M. St. P. & P.	859	1,169	1,725	1,703	1,783
N. Y. O. & W.	1,770	1,859	2,327	2,404	2,579	D. M.	1,602	1,917	2,104	2,048	2,361
N. Y. C. & W. (incl. B. & A.)	1,828	2,452	3,047	2,929	3,058	G. N.	791	1,151	1,601	1,543	1,439
P. & L. E.	2,331	4,317	6,389	5,955	2,420	M. & St. L.	816	931	1,101	1,160	1,285
N. Y. C. & St. L.	1,943	2,714	3,583	2,724	2,964	S. P.	739	1,055	1,349	1,416	1,414
P. M.	1,098	1,297	1,519	1,393	1,455	N. P. & S.	1,180	1,680	2,013	2,127	2,012
Ann Arbor	1,008	1,459	2,458	2,222	2,312	O. W. R. R. & N. (U. P.)	1,090	1,686	2,009	2,011	2,060
Wabash	1,183	1,655	2,435	2,165	2,194	Northwestern Region ....	.....	.....	.....	.....	.....
Great Lakes Region ....	.....	.....	.....	.....	.....	Alton	1,408	2,101	2,407	2,281	2,458
B. & O.	1,314	2,113	2,841	2,417	3,005	C. B. & Q.	1,036	1,542	2,079	2,017	1,837
B. & L. E.	1,909	2,207	2,726	2,603	2,694	C. & S.	742	1,135	1,514	1,635	1,984
C. & E. I.	1,248	1,467	1,885	1,772	1,976	Ft. W. & D. C.	1,095	1,798	2,245	1,806	3,511
C. & I. M.	1,865	2,734	2,952	2,729	5,140	C. R. I. & P.	1,432	1,931	2,302	2,155	2,277
C. I. & L.	1,301	1,960	2,192	2,283	2,382	D. & R. G. W.	829	1,381	1,979	2,370	2,476
D. T. & I.	770	1,547	1,860	1,723	1,933	A. T. & S. F.	1,125	1,793	2,461	2,747	2,966
E. J. & E.	2,789	5,233	4,240	3,657	3,702	S. P. (Pac. Sys.)	1,351	2,086	2,544	2,545	2,603
Long Island	2,519	3,514	4,435	4,015	3,664	T. P. & W.	1,201	1,348	1,681	1,555	1,511
Pennsylvania	1,939	2,566	3,363	3,378	3,460	L. A. & S. L. (U. P.)	1,424	1,829	2,246	2,326	2,740
C. R. R. of N. J.	2,089	3,083	4,035	4,037	4,678	O. S. L. (U. P.)	1,023	1,347	1,712	1,772	1,775
Reading	2,672	3,822	4,231	4,278	4,974	U. P. R. R.	1,388	1,841	2,321	2,364	2,238
West. Md. ....	.....	.....	.....	.....	.....	W. P.	1,995	2,499	3,045	3,031	2,827
W. & L. E.	1,788	2,230	2,951	2,831	2,849	Central Western Region ....	.....	.....	.....	.....	.....
Central Eastern Region ....	.....	.....	.....	.....	.....	K. C. S.	1,364	2,047	2,340	2,346	2,504
EASTERN DISTRICT	1,831	.....	.....	.....	.....	L. & A.	1,809	2,525	2,879	2,507	2,832
C. & O.	2,816	3,633	4,245	3,642	3,876	M-K-T.	1,117	1,393	1,956	2,050	2,110
N. & W.	2,266	2,990	3,076	3,297	4,474	G. C. L.	1,478	2,291	2,649	2,763	2,972
R. F. & P.	2,741	4,171	4,394	4,122	4,529	I-G-N.	1,941	2,025	2,537	2,810	2,881
Virginian	2,053	2,387	2,762	2,994	3,431	M. P.	1,456	2,226	2,785	2,393	2,607
Pocahontas Region	2,537	.....	.....	.....	.....	St. L.	1,751	2,736	3,844	3,792	3,920
A. & W. P.	998	1,731	2,297	2,431	2,455	T. P.-S. F.	1,030	1,313	1,804	1,750	2,053
A. B. & C.	1,349	1,594	1,719	1,556	1,639	St. L. Sw.	1,159	2,466	2,993	2,712	2,852
A. C. L.	1,698	1,964	2,009	2,082	2,192	G. C. & S. F.	1,166	1,900	2,791	2,153	3,081
Clinchfield	1,738	2,048	2,133	2,179	2,574	T. & N. O.	1,525	2,118	2,720	2,624	3,238
Georgia	1,336	1,457	2,005	1,926	1,884	Southwestern Region ....	.....	.....	.....	.....	.....
L. & N.	1,910	2,552	3,241	3,301	3,763	WESTERN DISTRICT	1,159	.....	.....	.....	.....
N. C. & St. L.	1,895	2,303	2,470	2,640	2,637	UNITED STATES	1,470	.....	.....	.....	.....

* Maintenance of way work placed under contract.

gions are as follows: Central Eastern region, Bessemer & Lake Erie 14 per cent and Detroit, Toledo & Ironton 63 per cent; Pocahontas region, Virginian 28 per cent and Norfolk & Western 36 per cent; Southern region, Seaboard Air Line 4 per cent (13 per cent compared with 1927) and Central of Georgia 48 per cent; Northwestern region, Chicago Great Western 18 per cent and Spokane, Portland & Seattle 47 per cent; Central Western region, Toledo, Peoria & Western 7 per cent and Fort Worth & Denver City 51 per cent; South Western region, International-Great Northern 18 per cent and St. Louis Southwestern 64 per cent.

Table 2 shows that the highest ratio of expenditures for maintenance of way and structures to railway operating revenues was that of the Atlanta, Birmingham & Coast 24.7 per cent, and the lowest that of the Baltimore & Ohio, 8.5 per cent. The highest average for any region was that of the New England region, 15 per cent, while the lowest was 10.8 per cent for the Central Eastern region. In Table 3, showing the ratio to railway operating expenses, the highest individual ratio was 28.5 per cent for the Bangor & Aroostook and the lowest, 11.3 per cent, for the Baltimore & Ohio, which is to be compared with 16.3 per cent in 1929. It is of interest to note that the ratio for the Lehigh Valley, 11.4 per cent, is the same as it was in 1929.

Table 4, which shows the man-hours of section labor per equated track mile, also indicates wide variations in the reduction in maintenance of way operations since 1929. In the New England region the section labor employed in 1931 represent reductions from corresponding figures for 1929 ranging from 8 per cent for the Bangor & Aroostook to 42 per cent for the Boston &

Maine, although for the latter road the reduction, compared with 1928, was only 30 per cent. Corresponding figures for the other regions are as follows: Great Lakes region, from 14 per cent for the Lehigh & New England to 64 per cent for the Pittsburgh & Lake Erie; Central Eastern region, from 30 per cent for the Bessemer & Lake Erie to 59 per cent for the Detroit, Toledo & Ironton; Pocahontas region, 26 per cent for the Norfolk & Western to 38 per cent for the Richmond, Fredericksburg & Potomac; Southern region, 13 per cent for the Seaboard Air Line to 57 per cent for the Atlanta & West Point; Northwestern region, 24 per cent for the Duluth, Missabe & Northern to 51 per cent for the Great Northern; Central Western region, 29 per cent for the Toledo, Peoria & Western to 58 per cent for the Denver & Rio Grande Western; and Southwestern region, 24 per cent for the International-Great Northern to 61 per cent for the St. Louis Southwestern.

THE BUDGET OF THE SWISS FEDERAL RAILWAYS for 1933 includes appropriations of approximately \$1,500,000 for construction of second track and of about the same amount for electrification, according to reports recently received by the Department of Commerce. Second-tracking will be begun or continued on 16 lines.

FAST TIME 100 YEARS AGO (From the New York Evening Post of December 6, 1832).—We omitted yesterday to mention that President Jackson's message was received in this city in about 12 hours after its delivery in Washington. It was brought by an express employed by the office of "The Standard," and we copied it from that paper, as did the other journals. ["Express" was then the term for special messenger.]

Federal Barge Line Property Valued at \$7,000,000

(Continued from page 974)

and the costs of reproduction new and less depreciation were \$17,259,812 and \$12,560,000, respectively. The value of the land owned and used was \$15,252.

In the six-year period, 1926 to 1931, the tonnage carried on the Lower division has not shown any wide variation. Tonnage reported as forwarded was somewhat more in 1931 than in 1926, and somewhat less than in any of the other years except 1930. The average for the six-year period was 1,297,057 tons as compared with 1,281,835 in 1931 and 1,451,607 in 1928, the peak year. Tonnage reported as received was 1,430,665 tons in 1928, and 1,161,353 in 1931, and averaged 1,238,667 for the six years.

The records show that the Warrior river division, like the Upper Mississippi, has suffered a deficit in each year of its operation. On February 29, 1932, this deficit amounted to \$1,458,500. In 1931, the tonnage forwarded is reported as 171,650 tons as compared with the maximum of 309,476 in 1927, and the minimum of 138,049 in 1930. The tonnage reported as received in 1931 was 248,533 compared with 299,697 in 1927, and 190,847 in 1930. The tonnage carried in 1931, while more than in 1930, was considerably less than that carried in 1926, 1927 and 1928. The corporation uses or holds for future use in service on the Warrior River division property other than land which cost it \$2,608,276. The costs of reproduction new and less depreciation of this property are \$2,492,968 and \$1,865,019, respectively. The value of the land used is \$58,293.

A purchaser or lessee of the property used in service on the Mississippi river would be required by the statute to operate both the Upper and Lower divisions and would, therefore, be required to bear the burden of the losses on the Upper division to obtain the profits on the Lower. In 1931, the net revenue derived from operations of both divisions amounted to \$443,927, exclusive of deductions for rentals, taxes and the expenses of the Washington office. Deductions for rentals and taxes were \$117,160 and the Washington office expenses were \$61,475. Assuming that 75 per cent would represent the proportionate share of the latter expense to be borne by the Mississippi river unit, the net revenue is reduced to about \$280,500. This would be the return at 6 per cent on an investment of \$4,675,000. It is a matter of common knowledge that in the year 1931 business conditions throughout the country were abnormally depressed. Notwithstanding this condition the net revenue of the Mississippi river unit, after deductions for taxes, rentals and a major share of the expenses of the Washington office, was approximately equal to the average for the years 1926-1931, excluding 1929, when a deficit was incurred. In 1926, the post prosperous year, the revenue, after corresponding deductions, amounted to \$481,959, equivalent to a return of 6 per cent on an investment of a little over \$8,000,000.

What the future may hold in the way of additional traffic on the Mississippi river in competition with carriers by rail and motor trucks cannot, of course, be definitely forecast. It is hardly to be expected, however, that a return of business prosperity will not be reflected in the earnings from water-borne traffic. The rate structure is becoming more stable, but what it will be, and what can be earned under it when it has been fully developed in consideration of cost of service, competing transportation agencies, competitive disadvantages due to slower movement and the necessity of rehandling in connection with rail transportation, can only be conjectured. The corporation is not subject to regulation of rates or service except on joint barge-rail or rail-barge shipments. This comparative freedom from regulation may have given it some advantages denied to rail lines and which might, by change in the law, be denied to a private operator. It is possible that under private operation some saving in cost could be accomplished as presumably the corporation has been more intent on developing a practicable service than upon obtaining maximum revenue.

With these considerations in mind, coupled with the provisions of section 3 (d) of the act, which require a purchaser or lessee to continue to operate the facilities sold or leased as to render service substantially similar to that rendered by the corporation, it is recommended that the commission find the commercial value of the property of the Inland Waterways Corporation assigned to service on the Upper and Lower Mississippi divisions to be \$6,500,000. This sum is intended to include the value of such property as is owned by the corporation on the Mississippi river but which is not necessary for transportation and could be sold or otherwise disposed of upon transfer to a private operator.

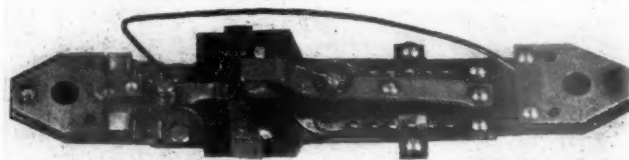
The past experience of the Warrior river division indicates that it has not yet been developed to the stage where it would attract private capital. While the deficit from operation was less in 1931 than in any preceding year, a substantial increase in

revenue or reduction in expense of operation would be required to make the service self-supporting, and there is no present assurance that either could be accomplished in the near future. A purchaser of the property could not dispose of it but would be required under the Act to use it in a manner substantially similar to its present use and to afford a service equal to that maintained by the corporation. Under the circumstance, no more than a nominal commercial value can be assigned to this division.

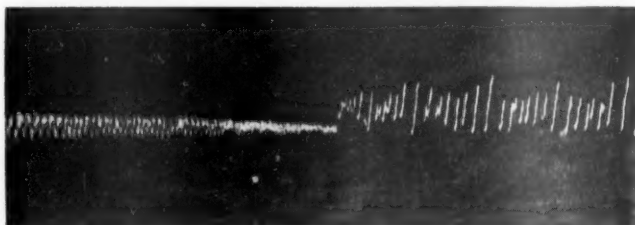
A Small Strain Gage

THE Baldwin-Southwark Corporation, Philadelphia, has developed a light, compact and relatively inexpensive recording strain gage. This instrument, which is called the Scratch Extensometer, is only four inches long and weighs less than an ounce.

The essential parts of the scratch extensometer include a light, two-part frame, a small, genuine white diamond, and a small target of specially heat-treated steel. The diamond and the target of the instrument are



The Scratch Extensometer Is Only Four Inches Long



Section of an Extensometer Target Bearing a Record of Variable Stresses

suitably mounted on the frame in such manner that any variable strain in the member under test causes the diamond to scratch a record on the target, the line of record lying parallel with the longitudinal axis of the instrument. Simultaneously with the formation of the strain record on the target, the target is acted upon by a resultant force, manually variable, which moves it at right angles to both the longitudinal axis of the instrument and the axis of the diamond travel. Thus, in the scratch record formed, one co-ordinate indicates strain, while the other is availed of in order that the strain record may be had over a period of more or less extent as fixed by the variability of the resultant transverse force applied to the target and the amount and rate of strain variation. There is no motion of the target when there is no change of strain in the member under test, and small changes in strain cause only correspondingly small transverse movements of the target.

With the target removed from the instrument, the strains indicated in the record thereon may be evaluated by means of filar microscopes of either the moving eyepiece or moving-table types, or the record may be photographed microscopically and the prints measured directly.

In addition to the advantages of convenience and economy inherent in the scratch extensometer because of its small size and its simplicity, it is said that the instrument is highly accurate. The targets used in the instrument are only 1 in. long by 3/16 in. wide by 1/100 in. thick, and, therefore, can be readily filed for future reference, if desired, without inconvenience.

Tests of Firestone Pneumatic Rail Tires

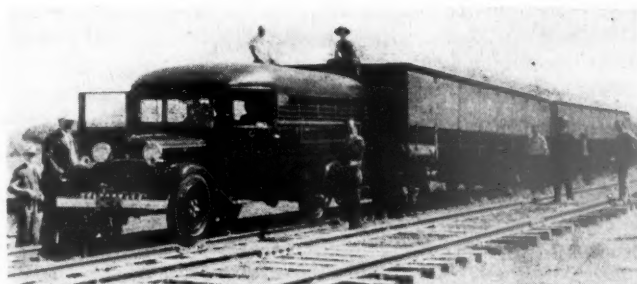
Ford eight-cylinder passenger bus operating on rails pulls two 24-ton hopper cars up a 2.3 per cent grade in Colorado

RECENT tests made in the vicinity of Denver, Colo., and in Alaska have produced some interesting data in connection with the use of the Firestone pneumatic rail tire, wheel and flange on automotive vehicles operating on railroad rights-of-way. The general design and construction of the Firestone wheel and tire are shown in a drawing accompanying this article. The wheel is of the disc type to which a steel felloe and rubberized high-carbon steel flange are riveted. Locking rings and bolts of the type commonly used in automotive practice hold the rim upon which the tire is mounted to the wheel. The Firestone rail tire is designed with a tread particularly adapted for use on steel rails and, as shown in the sectional drawing, contains an inflated tube with a solid rubber safety core which prevents the tire from going "flat" in event of puncture or deflation from any cause.

The nominal sizes of Firestone rail tires as developed at this time for this particular service are 4.50-19 and 4.50-24, the loaded radii respectively being 13.88 in. and 16.28 in. with an outside diameter over the flange of 30 and 35 in. respectively. The maximum carrying capacity of the 4.50-19 is 1,500 lb. and of the 4.50-24 1,800 lb.

Tests at Denver

The tests of this particular equipment were made in the vicinity of Denver, Colo. with a 21-passenger Ford bus of standard V-8 motor design being used. In the place of the regular balloon tires, the bus was equipped with 4.50-24 pneumatic rail tires. The bus was run to a stretch of fairly level track and there coupled to two 24-ton steel hopper cars. Along this stretch of roadbed, the bus pulled its 48-ton load at speeds as high as 30 miles an hour. It is said that both starting and stopping were accomplished as easily as though the vehicle were being operated on the highway with regular tire equipment. After these demonstrations on level track were concluded, the bus pulled the two cars up a 2.3 per cent grade, coming to a dead stop half way up the grade and then started again and completed the climb. In another test of the tractive ability of the rail tire, the same bus



Ford 21-Passenger Bus Hauling Two Hopper Cars Up a Heavy Grade During Tests at Denver, Colo.

pulled a 21-ton steel coal car up a 3.6 per cent grade over the LeVeta Pass for a distance of a mile and then continued its journey four miles up a 3 per cent grade at an average speed of 10 miles an hour. As a means of making a comparison between the performance of rubber and steel, the pneumatic rail tires were then removed and the bus equipped with steel tired wheels. With the steel tired wheels it was found to be impossible to pull even one car on level track without a continual slipping of the traction wheels of the bus.

It was not the purpose of these tests to show an actual method of handling freight with pneumatic tired automotive equipment and it is important to note that under no circumstances would equipment of this type be used for hauling the standard type of freight car. The tests, however, did demonstrate the practicability of carrying passengers in an automotive type vehicle equipped with pneumatic rail tires and, at the same time, hauling from 20 to 30 tons of freight on a steel-wheeled roller bearing trailer. The tests were made with the object of establishing that principle rather than a precise manner of working it out.

Service in Alaska

A Paige car, equipped with Firestone pneumatic rail tires is being operated over the White Pass & Yukon between Skagway and Whitehorse, Alaska. An officer of that railroad has expressed satisfaction with the manner in which this equipment is performing under the extreme conditions with which rail equipment must contend on this road in Alaska where grades as high as 3.9 per cent, with many miles of curve track, some extremely sharp, are encountered in the mountainous country that is served by the White Pass & Yukon. While this is a narrow-gage railroad, the car, according to an officer of the company, has operated over the heavy grades and sharp curves satisfactorily at a higher speed than would be possible with any other kind of equipment and, in addition, the rubber tires on the smooth rail make for easy riding and the elimination of noise.

One interesting statement in connection with the operation of this equipment in Alaska is made in a letter which is quoted in part: "We have been unable to slip the rubber tire on either wet rail or a snow-covered rail, the car successfully operating on a rail covered with two inches of wet snow, the wheel throwing practically all



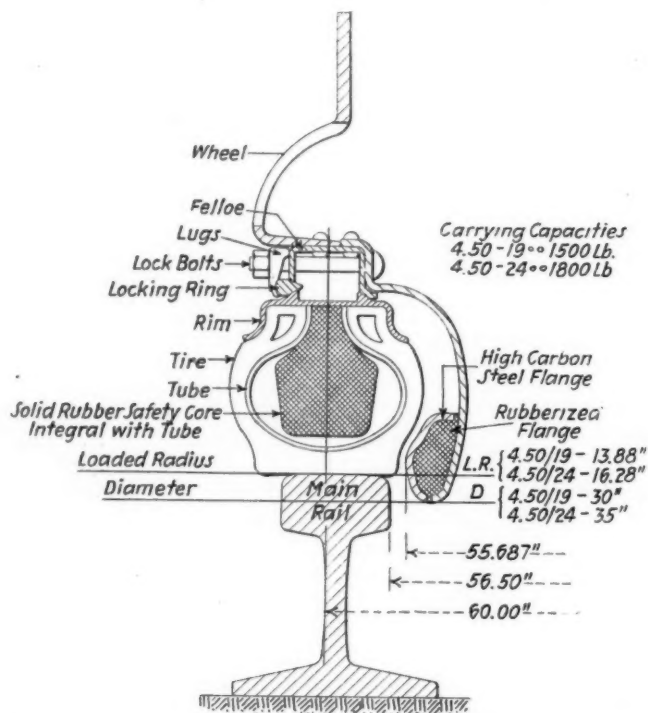
Standard Ford V-8 Passenger Automobile Equipped for Rail Service as an Inspection Car

the snow off. Due to the tread shape or some other element, on straight track the wheels follow the rail and the flange does not appear to come in contact with the rail except very occasionally."

The Firestone pneumatic rail tire is believed by its manufacturers to offer a practical instrument for the modernization of railroad equipment. It is claimed that with the pneumatic rail tire, maintenance costs on equipment would be reduced to an even greater extent than in the case of a vehicle operating on the highway, due to the relative smoothness of the railroad right-of-way. Furthermore, due to the fact that rubber has a coefficient of friction with steel three times greater than that of steel to steel, the pneumatic tire, even on a vehicle of comparatively light weight, provides enough tractive force to make it practical from the standpoint of hauling freight.

Automobile Type Official and Inspection Cars

Pneumatic rail cars are also adapted for use on official and inspection rail cars which are widely used by the railroads. One of the illustrations shows a standard Ford V-8 coach fitted with Firestone rail tires and wheels, indicating that any standard make of automobile can be



Sectional View of Firestone Pneumatic Rail Tire, Wheel and Flange (Shown in Normal Running Position)

used for this purpose and, in fact, it is said, can be converted to rail use in an hour's time.

A comparison is drawn between the engineering factors involved between the use of steel tired wheels and rubber tired wheels. In the case of the former, it is said that vibration, impact and shock loads are so great as to make the use of the standard automobile on rails impractical because of the fact that crystallization of the wheels, axles, bearings, etc. occurs rapidly whereas the pneumatic tire is said to eliminate the vibration, severe impact and shock loads and makes the revision of the standard automobile to provide heavier axles, bearings, etc., unnecessary.

Recent tests made in Florida with a Lincoln sedan are offered as substantiation of the fact that a standard type automobile, equipped with pneumatic rail tires, can operate safely at high speed, as with the high coefficient of

friction of rubber to steel, as compared with steel to steel, quick stops can be made. During these tests in Florida, a car so equipped made a test run between Miami and Jacksonville, covering a distance of 405 miles in 378 min. actual time, or 346 min. running time, at an average speed of 70 miles an hour and a maximum speed of 78 miles an hour.

Cab Signals Authorized on the Pennsylvania

THE Interstate Commerce Commission, in a decision by Commissioner McManamy, issued on December 12 (answering a petition filed on December 6) has authorized the Pennsylvania to operate locomotives with automatic cab signals, in lieu of automatic train control, throughout its lines equipped with the latter. In other words, the company is now free to use cab signals exclusively throughout its lines which are equipped for either automatic train control or cab signals.

No hearing was held on this petition, the commission deciding that its records in this field are already sufficiently full; and the report gives a condensed history of the experiments which have been made in automatic train control by the Pennsylvania since 1922, observing incidentally that experiments have been made on this road occasionally since the year 1880. The decision covers locomotives used on sections of the Central of New Jersey and the New York & Long Branch, over which Pennsylvania trains are operated. The orders of the commission of June 13, 1922, and January 14, 1924, are abrogated so far as they apply to any and all lines in the Pennsylvania system.

History

The first experiment with the Union three-speed continuous inductive apparatus developed by the Union Switch & Signal Company, was made voluntarily on the line between Lewistown, Pa., and Sunbury, Pa., 47 miles, and was put in operation on July 11, 1923. This was continuously operated until January 17, 1926, and as a result of the performance here the road installed a similar system between Baltimore and Harrisburg, this as a compliance with the first order of the commission. This installation was placed in service on July 17, 1926. The locomotive apparatus here include three-indication cab signals, though not required by the government; but cab signals had proved so valuable on the Lewistown-Sunbury line that all subsequent A.T.C. installations on the Pennsylvania included the cab signal equipment.

Further development resulted in the introduction of the coder system (interrupted rail currents) and this has been adopted as standard for all installations on the Pennsylvania, the Baltimore-Harrisburg line being changed so as to operate under this system. Next, the company developed a system of four-indication cab signals, with whistle and acknowledgment, without train control apparatus; and this was installed on certain sections beyond the requirements of the government. Granting the petition of the company, the commission, on February 6, 1931, authorized the operation of locomotives having this cab signal equipment in inter-divisional runs over sections where A.T.C. was required.

The report then gives a list of the different installations of the coder system, including 32 miles on the Baltimore & Ohio between Newark, Ohio, and Columbus, over which section the Pennsylvania operates

through trains. The aggregate length of these installations is 986.10 miles as shown below, (2,819 miles of track); to which should be added 39.70 miles of road of the Central of New Jersey and the New York & Long Branch. All of these installations function in conjunction with automatic (visual roadside) block signals, generally of the position-light type.

The Pennsylvania now has 1,107 locomotives and one gas-electric car equipped for service with automatic train stop, forestaller and cab signal; and 792 steam locomotives, 31 electric locomotives, 200 multiple-unit cars and

Cab Signals—Stop & Forestaller:	Road Miles
Baltimore Division (Balt.-Harrisburg).....	81.50
Middle Division (Harrisburg-Altoona).....	130.40
Atlantic Division (Atlantic City Line).....	56.40
Panhandle Division (Pittsburgh-Newark).....	157.41
Columbus Division (Columbus-Indianapolis).....	186.73
Baltimore & Ohio (Voluntary).....	32.30
Total	644.74
Cab Signals—Whistle & Acknowledger:	
Atlantic Division (Jersey to Vernon) (Vol.).....	5.80
Phila. Terminal Division (Shore to Jersey) (Vol.).....	2.63
New York Division (Vol.).....	77.50
Philadelphia Terminal Division (Vol.).....	15.67
Maryland Division (Vol.).....	82.60
Baltimore Division (Vol.).....	44.86
Pittsburgh Division (Vol.) (Altoona-Pittsburgh).....	112.30
Total	341.36
Grand Total	986.10

one gas-electric car equipped with cab signal, whistle and acknowledger without A.T.C.; and 22 additional electric locomotives are being equipped. Removing the A.T.C. equipment from the 1,107 locomotives and using cab signals only would render available 1,952 locomotives for service on any of the equipped tracks. Under existing conditions, the operation of A.T.C. on the five divisions covered by the government order makes necessary separate pools of the locomotives so equipped; and the modification now requested obviates the necessity for such pooling, thus simplifying the locomotive problem and effecting substantial economies. The maintenance of A.T.C. costs six mills per locomotive mile, while that of cab signals is four mills, a difference which means an annual saving of probably \$35,000.

The Argument

The company is convinced that there has been and there will be no sacrifice of safety through the proposed change. The report here quotes and reaffirms sections of former decisions of the commission approving what the Pennsylvania has done (November 26, 1928, and February 6, 1931). Of 457 enginemen, experienced in the use of both A.T.C. and the cab signal alone, 449 prefer the latter. The company expects the elimination of A.T.C. to reduce undesirable stops and to remove dangers incident to undesired automatic brake applications occurring at low speed. The company in its application reconfirmed its former statement as to the superiority of cab signals as compared with A.T.C.

The granting of the present petition will result in continuous cab signal operation between New York City and Indianapolis, Ind., with the exception of the Philadelphia division, Philadelphia to Harrisburg, about 100 miles, which division the company desires to equip as soon as the financial situation will permit.

Conclusions

This proposal, says the report, is a step forward in the interest of safety, as it will result in the equipping of another division; in consideration of the installation of cab signals as proposed between Philadelphia and Harrisburg, and of all other facts here stated, the orders

of the commission will be modified to permit the use of cab signal whistle and acknowledger without automatic train control on the lines which have been equipped with A.T.C. pursuant to the government orders.

Appended to this report is a code of specifications and requirements for a continuously controlled automatic cab signal system, for installation and operation by the Pennsylvania. The order makes the cab signal installations subject to inspection and approval of the commission. The specifications require an audible cab indicator which will sound and continue to sound until acknowledged, whenever the system causes a change to a more restrictive indication; and the system, as far as practicable, must display its most restrictive indication if an essential parts fails or is removed, or a break, cross, or ground occurs in electric circuits; or in case of a failure of energy.

Annual Report of the Bureau of Safety

THE Interstate Commerce Commission has issued in a 26-page pamphlet the annual report of W. P. Borland, director of the Bureau of Safety, together with some extracts from the annual report of the commission dealing with this branch of its work. It is for the fiscal year ended June 30, 1932, but includes some data later than that.

Because of reduced appropriations for printing, some of the tables formerly published are now omitted, one of which is that showing the inspection of cars for defects, on each road separately. The unpublished tables are available for reference at the office of the bureau. Of the 1,331,239 freight cars inspected, 1.85 per cent were found defective. This percentage has steadily decreased from 2.52 in 1928. Similar improvement is shown in the records of passenger cars and locomotives.

Laboratory tests of automatic train pipe connectors at Purdue University have been continued and those of the Robinson and Johnson types have been completed. The American passenger-type connector is being tested.

Instances of excess service under the rules of the hours-of-service law are growing constantly less. The detailed report of data under the hours-of-service act will not be published this year.

The usual data are given concerning signals and automatic train control. On the majority of roads the recommended standard practice is now in vogue providing that, with automatic train control, a restrictive signal must be observed and obeyed before an automatic application of the brakes may be forestalled.

In collaboration with the General Railway Signal Company and the American Railway Association investigations have been made of solid iron inductors as used with intermittent inductive automatic train stops. As a result of the tests made, the commission states the following conclusions:

1. The use of strap-iron inductors for making departure tests from engine terminals would not fail to disclose defects that would be discovered if the laminated-core inductors were used.

2. The use of strap-iron inductors as small as 3 inches by 1 inch in cross section for making departure tests would impose such narrow operating limits that the departure tests would be more rigid than required, resulting in engine equipment which was in proper operating condition failing to meet the requirements.

3. Strap-iron inductors cannot be relied upon under high-speed conditions, and even at medium speeds do not provide an adequate margin of safety. Strap-iron inductors should not be used in connection with signals governing train movements.

Because of difficulty with cab signal indications on the Boston & Maine, where chrome-manganese rails had recently been laid, tests were made with a portable flux-meter, and it was found that these rails had a number of strong magnetic poles; and it was concluded that the magnetic properties of these rails were such as to affect the cab signal and produce flickering indications. These rails are magnetized by the lifting magnets used at the shops, which magnetic properties are retained for an indefinite period.

Noting the order allowing the Union Pacific to use cab signals in lieu of automatic train control, the report gives in full the specifications prescribed by the commission covering cab-signal installation and operation. Other roads have applied for authority to discontinue the automatic train control. [Orders granting the petitions of the Burlington and the Pennsylvania have since been published.]

The report notes permission given to certain roads for temporary and comparatively unimportant suspension of A.T.C. regulations—the Long Island, the Burlington, the Pennsylvania, and the Minneapolis & St. Louis. Accidents in automatic train control territory are briefly reported, all but one of them showing no fault in the A.T.C. system.

Block signal statistics are given (as already reported in the *Railway Age* of May 14, last, page 817.) The length of road now equipped for operation with automatic train control and visual cab signals is 3,840 miles; locomotives equipped 4,515. On 906 miles of road where cab signals are in use, wayside visual signals have been taken out of service, except at interlockings. The Reading Company is operating 78 multiple-unit cars with four-indication cab signals, without train control.

The New York Central, at four gravity yards, has equipped its tracks for operation (by the conductor) of cab signals in the pusher locomotives by means of electric currents communicated along the rails. Eight locomotives are thus equipped.

Experiments are being continued looking to the operation of different types of automatic train control over a given line.

Investigations in respect to the causes of transverse fissures in rails have been continued.

Under the head of safety appliances, 94 suits for violation of the law were begun during the fiscal year and cases comprising 195 counts were confessed, six were dismissed and 14 were tried. Of the 14 counts tried, four were decided in favor of the government, five in favor of the defendant and five are pending. The five decided against the government were taken to the circuit court of appeals and the judgments were reversed. On June 30, 1932, there were pending 88 cases. Two decisions concerning the violations of the airbrake law are reported.

The Bureau of Safety investigated 58 train accidents in the course of the year and presents a table classifying these as to whether probably preventable by automatic train control, etc. In connection with these investigations, the report contains a table showing for the calendar years 1929, 1930 and 1931 the following statement of passengers and employees killed and injured in accidents at highway grade crossings:

	1931		1930		1929	
	K	I	K	I	K	I
Passengers	31	31	10	10	28	28
Employees	16	41	18	69	23	106

During the calendar year there were 4,100 accidents at highway grade crossings; 1,811 persons killed, 4,657 injured; and of these, the numbers in which automobiles were involved were: 3,625 accidents; 1,580 killed, 4,336 injured. As shown in the above table, an appreciable percentage of these victims were innocent passengers and trainmen traveling on railroad trains. During the calendar year 1931, there were altogether 47 derailments of trains as a result of collisions between trains and automobiles; 28 persons killed, 59 injured.

Uniform Regulatory Legislation Urged

WASHINGTON, D. C.

BETTER co-ordination of federal government agencies dealing with transportation and a plan of uniform regulatory legislation covering the various forms of transportation operating in competition with the railroads are recommended by the Special Committee on Competing Forms of Transportation of the Chamber of Commerce of the United States in a report submitted to the board of directors of that organization. The committee also expresses the belief that government operation of transportation is not in the public interest and recommends that it be discontinued. David F. Edwards, president of the Saco-Lowell Shops, Boston, Mass., is chairman of the committee.

The committee strongly urges that all interests concerned with competing forms of transportation, including producers, shippers, and consumers, unite at the earliest possible date on a just program based on the principles enunciated in this report. It points out that "an over-supply of transportation, largely a development of the last decade, has brought to the forefront new and serious problems affecting the welfare not only of the transportation agencies but of the general public" and that the situation is the more serious because "some of the agencies have been and are today permitted to operate without reference to the public need or the effect on the transportation system as a whole, while other agencies are comprehensively regulated," and "some are provided with facilities at public expense with or without contribution in user taxes."

"The situation calls for comprehensive planning and co-ordination of transportation," the report says, "elimination of any unfair advantages and inequitable taxation where they exist and a system of regulation which will permit each agency to function to its best advantage in the public interest in accordance with its inherent merits and without special privileges over other forms of transportation in which there is equal public interest." The purpose of the report is to propose measures to accomplish these ends, which it does in the following recommendations:

Water Transportation

Recommendation No. 1—The Committee recommends that common carriers by water in domestic commerce should be required to file and adhere to rates, including port-to-port rates, in the manner now required by law with respect to railroad rates, and that such rates or modifications thereof should be subject to approval by the regulatory body, with reasonable differentials between rail and water rates where economically justified.

Recommendation 2—The Committee recommends that neither rail nor water carriers should be permitted to establish rates to competitive points which are not adequately compensatory.

Recommendation 3—The Committee recommends that all common carriers by water in domestic commerce should be required

to obtain certificates of public convenience and necessity, and should thereafter be required to maintain an operating schedule, with the right to modify the amount of service in accordance with the reasonable demand. Operators of existing services should be allowed six months to establish scheduled services and qualify for certificates of public convenience and necessity.

Recommendation 4—It is recommended that industrial carriers and owners or charterers of other vessels not common carriers should be required to charge the established common carrier rates for cargo other than their own.

Recommendation 5—The Committee believes that government operation of water transportation is not in the public interest and recommends that it be discontinued.

Highway Transportation

Recommendation 6—The Committee recommends that there should be standard uniform requirements in all states as to allowable height, width and length of single and combined units, axle and wheel loads and speeds as recommended by the American Association of State Highway Officials.

Recommendation 7—The Committee further recommends that the enforcement of such uniform vehicle standards and safety regulations and the protection of the highway should be administered by the state in the exercise of its police powers.

Recommendation 8—The Committee recommends that the construction and maintenance of general use highways, including costs of designated through highways within municipalities limited to the average per mile cost of high-type state highways should be paid by user taxes, with separate schedules for private passenger automobiles, buses and trucks as follows:

For private passenger automobiles (a) a registration fee graduated according to weight or horsepower and (b) a gasoline tax.

For buses and other vehicles carrying passengers for hire (a) a registration fee, (b) a mileage tax graduated according to seating capacity and (c) a gasoline tax.

For trucks (a) a registration fee, (b) a weight tax graduated so that it will increase more than directly with weight, or a ton-mile tax, and (c) a gasoline tax.

Recommendation 9—The Committee further recommends that gasoline taxes should not be so high as to encourage wholesale evasion and opposes federal invasion of this field of taxation.

Recommendation 10—The Committee recommends that states enter into reciprocal agreements for issuance of special licenses for commercial vehicles to cover states other than the home state prevail.

Recommendation 11—The Committee recommends that all motor carriers for hire, whether in common carrier or contract at equitable rates to be determined by the conditions which service, be required to secure permit to operate, but that common and contract carriers in continuous operation during a stated period, and up to the time the law requiring permits is enacted, be granted such permits without further proceedings if their operations are bona fide for the purpose of furnishing reasonably continuous service and if they meet the other requirements of such legislation.

Recommendation 12—The Committee recommends that all motor carriers for hire, whether common or contract, be required to file and post their rates and adhere to them at all times, and that these rates shall be just and reasonable and shall not discriminate among different shippers, the proper regulatory body to have authority to pass upon complaints.

Recommendation 13—The Committee recommends that all those using the highways for commercial purposes be required to establish their financial responsibility with respect to public liability and that common carriers be required to establish similar responsibility with respect to passengers and cargo.

Recommendation 14—The Committee recommends that hours of service of operators of motor vehicles should be reasonably limited by public authority.

Recommendation 15—The Committee recommends that proper regulatory bodies in each state be designated to enforce the provisions of the regulatory laws herein recommended and that these state bodies closely cooperate to the end that the various regulatory measures will be in harmony and will further sound treatment of highway transportation.

Recommendation 16—The Committee recommends that in the public interest the same degree of regulation of interstate as of intrastate carriers should be applied and further recommends that, in regulation of highway transportation, the federal regulatory body should serve only as a court of last resort and that provision should be made for delegation of authority to boards of the state bodies in the states involved.

Recommendation 17—The Committee recommends that Section 500 of the Transportation Act should not be construed as an expression by Congress of preference for rail or water transportation over highway transportation or as a declaration by Congress of the relative importance to the public of the several kinds of transportation.

Recommendation 18—The Committee recommends that, in reorganization of the federal government activities, agencies dealing with transportation be better coordinated and brought into closer working relationships.

The report says in part:

Throughout this period of change, the railroads have remained the backbone of the national transportation system, and we need only imagine a complete suspension of railroad operations to realize that they must inevitably continue to be our main reliance. Up to the end of 1930 they continued their policy of improvement to meet the growing needs of the country. The net result is that under present conditions we have a super-abundance of transportation facilities. Of the transportation agencies the railroads are the chief sufferers, and under the present depressed conditions few of them are earning their operating expenses and fixed charges. The other forms are each suffering from the competition among its own units, however, and many of their operators favor reasonable regulation. Meanwhile shippers, while benefiting greatly from the superiority of the service in some instances and the low rates in others, are encountering discrimination and uncertainty in rates and service, the demoralization of glutted markets and other evils which in 1887 brought about legislation for the regulation of the railroads.

The oversupply of transportation and the evils of destructive competition are accentuated by the present depressed business conditions, but it is clear that the return of prosperity will not fully solve the problem. The difficulties were becoming apparent before the depression. The committee agrees that unregulated competition with regulated forms of comparable transportation is unfair, contrary to the public interest in the losses which are caused, and inequitable to shippers whose interest is in dependable service and conditions.

Regulation should give each form of transportation opportunity to develop its potentialities so long as it does not have unfair advantages over other forms. The chief problems for consideration at the present time are as to the fairness of the conditions under which water transportation and highway transportation are conducted as compared with the conditions which surround or should surround rail transportation. Nothing in this report should be construed as favoring or implying the desirability of so regulating highway or waterway rates so as to raise them to the level or in excess of railroad rates.

Air transport and pipe line operation also present problems of transportation, but apparently, in the opinion of the Chamber's officers, they were not considered of sufficient immediate importance to warrant consideration in this report. No representatives of the aviation or gas industries were included in the personnel of the committee and problems relating to those industries are not dealt with in this report.

The prolonged operation by the federal government of the barge lines on the Mississippi and Warrior rivers, the extension of service in 1931 to the Illinois river and the pending application of the Inland Waterways Corporation for authority to install service on the lower Missouri river are viewed with apprehension by those who believe the government should refrain from engaging in business. This apprehension would be still keener if business men generally realized that the Denison Act of 1928 imposes conditions to the disposal of the lines which are almost impossible of fulfillment. This government operation, begun as an emergency war time activity, was continued after the war to demonstrate the possibilities of inland waterway common carrier service and to work out certain problems relative to the establishment of joint rail-water routes and rates which it was believed private capital could not be expected to undertake. Twelve years after the turning back of the railroads to their owners, the end of the demonstration seems no nearer than when it was begun—in fact, the Denison Act as it now stands has put it much farther away.

Meanwhile, the government, operating at a loss when account is taken of interest on investment and the taxes a private enterprise would have to pay is cutting into the revenues of the competing railroads, and the taxpayers, including railroads, are making up the barge line losses. At the same time common carrier barge lines established with private capital are obliged to compete with the interest-exempt and tax-exempt organization, and if it is demonstrated that these privately owned waterway operations can succeed it will be in spite of and not because of the government operation.

The members of the committee are:

David F. Edwards, Chairman, president, Saco-Lowell Shops, Boston, Mass.; A. J. Brosseau, president, Mack Trucks, Inc., New York, N. Y.; Joshua C. Chase, Chase & Company, Sanford, Fla.; L. W. Childress, president, Mississippi Valley Barge Line, St. Louis, Mo.; W. L. Clayton, president, Anderson, Clayton & Co., Houston, Tex.; Eric A. Johnston, president, Brown-Johnston Company, Spokane, Wash.; W. P. Kenney,

president, Great Northern Railway, St. Paul, Minn.; Franklin D. Mooney, president, Atlantic, Gulf & West Indies S. S. Lines, New York, N. Y.; Allison Owen, Diboll & Owen, Ltd., architects, New Orleans, La.; J. J. Pelley, president, New York, New Haven & Hartford Railroad, New Haven, Conn.; J. Howard Pew, president, Sun Oil Company, Philadelphia, Pa.; C. O. Sherrill, vice-president, Kroger Grocery & Baking Company, Cincinnati, Ohio; R. H. Sherwood, president, Central Indiana Coal Company, Indianapolis, Ind.

Messrs. Chase, Clayton and Pew dissent from Recommendations 1-4. General Owen dissents in part from Recommendation 5 and also from port-to-port regulation of water transportation as embodied in Recommendations 1-4. Messrs. Kenney and Pelley dissent from that part of Recommendation 6 endorsing the standards recommended by the American Association of State Highway Officials. Mr. Mooney desired to be recorded as not voting on the question of endorsing the standards recommended by the highway officials. Mr. Brosseau dissents from the inclusion in Recommendation 8 of the words "or a ton-mile tax." Messrs. Brosseau and Clayton dissent from Recommendations 11, 12, 15 and 16.

Railways Ask Continuation of Freight Surcharge

WASHINGTON, D. C.

TESTIMONY on behalf of the railways in support of their application to the Interstate Commerce Commission for a continuance beyond March 31 of the emergency freight rate surcharge allowed by the commission last year in Ex Parte No. 103 was presented at a hearing before Division 7 of the commission and a committee representing the state commissioners on December 28. A petition for such a continuance had been filed by the Association of Railway Executives with a request for the elimination of the condition under which revenues derived from the surcharge have been paid into a fund administered by the Railroad Credit Corporation for loans to railroads failing to earn their interest charges. Division 7 consists of Commissioners Meyer, Eastman, Lee, Lewis, and Porter.

Only one day was required for the presentation of the carriers' case and there was no hostile cross-examination. Parties other than the carriers are to be allowed to file written statements by January 15 and Commissioner Meyer stated that only a few requests had been made for an opportunity for oral testimony so that it was possible that no additional hearing would be required. The principal point on which the commissioners expressed interest was as to the extent to which the roads have been compelled to reduce rates which had been increased by the surcharge to meet competition of trucks and water carriers.

Dr. Julius H. Parmelee, Director of the Bureau of Railway Economics, the first witness for the railways, summarized the present situation of the rail carriers in part as follows:

Total operating revenues of the railways of Class I were nearly one billion dollars less in 1930 than in 1929. They were more than a billion dollars less in 1931 than in 1930, and they declined further, during the first ten months of 1932, by a total of \$968,000,000 under the corresponding period of 1931. If the same rate of decrease continues to the end of 1932, operating revenues for the present year will be less than in 1929 by nearly three and a quarter billion dollars, or more than fifty per cent.

Net railway operating income aggregated \$1,251,698,000 in 1929. This was equivalent to a rate of return of 4.81 per cent on their property investment. This rate of return declined to

3.27 per cent in 1930, declined again to 1.99 per cent in 1931, and has still further declined in 1932, the rate for the first ten months of the present year being 1.15 per cent.

The carriers as a whole have failed to earn their fixed charges in 1932 by a considerable margin. The net deficit amounted to \$169,000,000 during the first nine months of 1932, and appears likely to approach \$200,000,000 for the year as a whole. During these nine months, 122 roads operated at a loss. These roads cover a mileage of 187,921, or 77.6 per cent of the total mileage of Class I, and their deficit in respect to meeting their fixed charges aggregated \$231,509,000. For the same nine months, after deducting the revenues from the emergency rates, a total of 128 roads, covering a mileage of 200,848, or 82.9 per cent of the total, reported a deficit, and the deficit they reported amounted to \$265,019,000.

Freight traffic for 1931, expressed in terms of revenue carloadings, was 28.6 per cent under the average of the five years from 1925 to 1929. Revenue carloadings for the first 49 weeks of 1932 were 24.9 per cent under the corresponding period of 1931, and 46 per cent under the corresponding periods of the five years ended in 1929.

Dr. Parmelee told the commission that the railroads in 1932 paid forty cents in taxes out of each dollar of net operating revenue.

Only 30 Class I railroads, who participate in the Marshalling and Distributing Plan, 1931, earned a net income in excess of their fixed charges, for the first nine months of 1932. The receipts from emergency rates reported by the Class I steam roads of the United States as a whole, first ten months of 1932, were 2.6 per cent of the aggregate gross freight revenue of the carriers. Compared to net railway operating income, the total emergency revenue was equivalent to 20.2 per cent.

It is clear that a substantial portion of the net railway operating income earned in 1932 was contributed by the emergency revenue, and that the net operating income would have been greatly reduced had not these emergency revenues been received.

E. G. Buckland, president of the Railroad Credit Corporation, described the operation of the Marshalling and Distributing Plan. Carriers assenting to the plan, which became operative as of January 1, 1932, turn over to the Credit Corporation the amounts derived by their respective companies from the authorized increases. Through the audit of waybills in the several accounting departments, the amounts are ascertained; but as this involves the element of time, an allowance of 40 days from the close of the month is granted in which to make reports and ten days additional before the remittances become due. The carriers assenting to the plan have stated that, for the period ending October 31, 1932, the cash proceeds from the increased rates amounted to \$52,205,225. The payments in cash to the Credit Corporation have amounted to \$51,891,040.

D. T. Lawrence, chairman of the Traffic Executives' Association, Eastern Territory, followed with a series of exhibits showing instances in which the effect of the surcharge has been nullified by reductions in the basic rates, generally for the purpose of meeting unregulated truck and water competition. He said it would be impossible in the time allowed to present a compilation of all the rate reductions made during the past year but that he had attempted to show those which had some relation to the surcharge. The amount by which the expected increase in revenues has been reduced by such reductions, he said, could be estimated only by speculation, but the surcharge means about \$37,000,000 a year to the eastern roads and the reductions would represent only a minor fraction of that amount. While the surcharges have caused more or less trouble, he said, their continuance would still represent an important and needed contribution to the revenues of the carriers.

Commissioner Eastman appeared to derive considerable pleasure from asking questions as to why some of the reductions in rates were made, since the surcharge had resulted from an application of the roads for a 15 per cent general increase in rates, and in being told in reply that in many instances the amount of the surcharge was enough to divert the traffic to truck and water

transportation. He also pointed to some inconsistencies in the amount of the reductions made on different commodities of similar characteristics, but Mr. Lawrence replied that there are some surprising inconsistencies in the truck rates with which the roads have to compete. "There isn't any sense in the truck competition," he said. When Eastman asked if many of the reductions had been forced by the action or announcements of individual rail lines, he said: "That will occasionally happen." Mr. Lawrence said that many of the reductions made represent departures from the theory of making rates to apportion the cost of transportation among various commodities and represent rather the amount that the railways can get. Commissioner Porter also brought out that in some instances reductions have been made during the pendency of cases before the commission in which the commission decided that the railways did not have to make reductions asked and in other instances reductions have been made which were formerly resisted in cases before the commission. Unregulated competition has changed many situations materially, Mr. Lawrence said, and when his attention was called to some reductions made without regard to the distances over which truck competition is ordinarily considered important he said that the many restrictions and regulations imposed on the railways, particularly the requirements of the fourth section, have made it necessary for them to take rather summary action in many instances. If the surcharge is not continued there will be a very substantial reduction in both the gross and the net revenues, he said.

Similar testimony was given by J. E. Tilford, chairman of the Southern Freight Association, and E. B. Boyd, chairman of the Western Trunk Line Committee. Mr. Tilford filed an exhibit listing about 30 commodities on which general reductions in rates had been made in southern territory during 1932 because of motor truck competition and another of 14 pages listing specific reductions to meet truck competition, generally made or proposed by a single line because of the local situation. He said the amount of traffic affected by such reductions was relatively small and that the revenue to be derived from the surcharge would have an important effect on the total revenues. He pointed out that approximately 10,000 miles of railway or about 25 per cent of the mileage in Southern territory is in receivership. When Commissioner Eastman asked why the roads had not confined some of the reductions to short-haul rates instead of applying them generally, Mr. Tilford said that the roads are still experimenting as to the best way of meeting truck competition. Mr. Boyd said there had been comparatively few instances of elimination of the surcharge in western territory and that in 10 months it had amounted to 1.96 per cent of the freight revenues or about \$15,000,000. Generally the surcharge was added after such reductions and in most cases the reductions made to meet outside competition were considerably greater than the amount of the surcharge, ranging from 5 to 60 per cent. He said he knew of no case where the emergency charge alone was sufficient to divert traffic. If the roads could get the rates prescribed by the commission in No. 17,000, Part 2, he said, they would not need the surcharge.

Daniel Willard, president of the Baltimore & Ohio, illustrated the benefit caused by the surcharge revenue by pointing out that his road's operating revenues in 1932 were \$47,000,000 less than in 1931 and that whereas in 1931 it had earned a surplus of about \$3,500,000 in 1932 it had fallen short of earning its fixed charges by \$6,500,000. As the surcharge revenue amounted to about \$3,500,000, without it the B. & O. would have

been \$10,000,000 short of fixed charges. Although reductions had been made to meet truck and water competition amounting to \$2,000,000 during the year the surcharge was applied to about 90 per cent of its traffic and the reductions which had to be made were greater in amount than the surcharge. He was unable to see, he said, where the basic rates plus the surcharge have affected the movement of business except in those cases where the situation has been met by reducing rates. Commissioner Meyer asked about the effect on the general railroad situation of the discontinuance of the Railroad Credit Corporation. Mr. Willard replied that most of the roads that collect the surcharge will need all or nearly all of it for their own interest requirements. When Commissioner Eastman asked if there is any reason why the Chesapeake & Ohio and Norfolk & Western, that are still paying dividends, should have a surcharge, except because of the needs of other roads, Mr. Willard replied that the question answered itself but that it was necessary to consider the roads as a group. Alfred P. Thom, general counsel of the Association of Railway Executives, pointed out that it had been shown that only about \$5,000,000 or \$6,000,000 would be available for distribution.

Paul Shoup, vice-chairman of the Southern Pacific, gave a similar statement from the point of view of the Western roads, saying that although it had been necessary to make many reductions to meet truck and water competition such reductions were greater than the amount of the surcharge and the latter helped to offset the reductions. The Southern Pacific, he said would receive about \$1,840,000 from the surcharge for 1932. W. R. Cole, president of the Louisville & Nashville, sent a statement in the form of an affidavit, pointing out that none of the Southern roads in 1932 had earned their fixed charges with the exception of one that did so with the benefit of the surcharge, and saying that it should be continued indefinitely because its elimination at this time would result in serious revenue losses.

Barge Lines Oppose Lower Costs to Shippers

MILTON W. HARRISON, president of the Security Owners Association, New York, in a letter to L. W. Childress, president of the Mississippi Valley Barge Line at St. Louis, has come to the defense of the railways in their proposal to reduce rates on sugar to meet barge line competition, and in so doing expresses surprise that waterway advocates who continually talk about "cheap transportation" are now trying to prevent it. Mr. Childress had written Mr. Harrison suggesting that his association investigate "voluntary rate reductions made by the railroads to meet various forms of competition which will disclose instances where the increased tonnage at the reduced rates produce less revenue than the railroads were getting on the smaller movement of the traffic." He mentioned sugar rates specifically.

"The point," reads Mr. Harrison's reply, "is not one of whether or not the rates which the rail carriers are instituting on sugar will yield a less revenue on a greater volume of traffic than was formerly derived from the lesser volume, but of preventing the loss to the railroads of the entire volume."

"The Louisiana sugar industry is dependent for its market outside of the south upon transportation rates

which will equalize the competition to which it is subject from the North Atlantic port refineries. Always in the past, with this in mind, the railroads have adjusted their rates to enable the Louisiana sugar producers to market their product in the middle west.

"During the period of the Railroad Administration heavy advances were made in rates both from Louisiana to the northern consuming and distributing centers, and from the North Atlantic refineries to those points. The relationship was generally maintained, but possible competitive factors were ignored. As illustration, the rate from New Orleans to Chicago was raised from 24.3 cents to 45 cents and later to 54 cents, and adding the charge from the emergency increase the rate is now 56 cents. The advances made by the Railroad Administration on June 24, 1918, were far above the average advance of 25 per cent through the country.

"During the war period and the post-war era of prosperity it was possible to maintain these rates as much of the watercraft on the lakes and rivers were diverted to other transportation. At present, however, the situation has entirely changed. With the renewal of water competition by lake and river more and more of the sugar traffic has been diverted from the rails. The trend has been particularly in evidence during the depression which has forced shippers to utilize the cheapest form of transportation wherever possible.

"To illustrate the present disparity in rates between the railroads and their water competitors: By river from New Orleans to St. Louis the rate is about 20 cents, Evansville, Louisville and Cincinnati 23 cents, warehouse delivery about 3 cents additional. Railroad rates from New Orleans are—St. Louis 52 cents, Evansville 53 cents, Louisville 56 cents, Cincinnati 56 cents, including the emergency rate increase charge. The lake lines maintain rates of 21 cents and upwards for large lots, and practically an open rate for round lots of 27 cents from New York to Chicago, the latter including insurance and the cost of loading from refinery to barges and unloading from barges to warehouse, not included in rail rates.

"The diversion of sugar to water transportation has been significant. From 1929 to 1931 the sugar received by Chicago from the lakes increased from 38,000 tons to over 90,000 tons or 137 per cent. The Illinois Central Railroad movement of sugar from Louisiana to States where competitive transportation is available will probably decrease over 70 per cent in 1932 from 1931.

"It seems to us that the railroads must fight to survive. Their efforts to recover a lost volume of traffic by reducing rates, so long as such rates remain compensatory (and they have given affirmative evidence that they are in the current hearings before the Commission), is not as you indicate in your letter, 'preferring to die by suicide rather than by slow bleeding.' To us the testimony of the water carriers before the Commission in the sugar rate case is as truly amazing as it is inconsistent. Their claim that the reduced rates for which the railroads have applied will necessitate water rates so non-compensatory as to put some of the water carriers out of business, does not seem to square with the avowed and continuous argument of waterway advocates that the shipper is entitled to transportation at the lowest possible cost, and that the purpose of the development of waterway transportation is to bring down the rates.

"We believe that given equal opportunity and regulation the rail carriers can profitably outbid for business any other form of common carriage. Thus, our most intensive effort will be made to secure for the rail carriers equality of opportunity and regulation, so that we may receive a fair return on invested capital."

Communications . . .

Tonic for the Railroads

RUMSON, N. J.

TO THE EDITOR:

I've given a lot of thought to the serious conditions in which our major railway systems find themselves. I've often likened the nation's railroads to the blood stream of the human body. At the present time that blood stream is flowing at a very sluggish rate. What the thin and watery blood needs is more red blood corpuscles (loaded freight cars) and white corpuscles (locomotives now in white lead) to start moving again.

How is this to be done? By Doctors Senate and Congress providing a good tonic in the form of wise legislation to stimulate heart action. By wise legislation I mean the proper regulation of bus and motor truck lines, and by not giving too much candy to that spoiled child, the waterways.

Another good remedy would be a little less I. C. C. butting in, thus giving the managements a better opportunity to work out their problems. Stimulate public interest in the serious problems facing the railroad managements by increased patronage and lining up behind them in their fight for fair competition.

When the railroads come up from under the load of the depression, then only will prosperity be in sight for us all.

LAWRENCE J. CALLANAN.

No Substitute for Railways

EAST PITTSBURGH, PA.

TO THE EDITOR:

The time-honored American customs of kibitzing the railways, wise-cracking about the local "rattlers" and consigning them to the limbo of lost souls, have produced an attitude of public mind which, somehow, must be converted to a clear understanding of the issues at stake. The average citizen visions the "passing" of the railways and sincerely ascribes it all to "progress." Normally he lacks the time, and often the inclination, to digest the highly informative "heavier" press and magazine articles dealing with regulation, taxation and other vital questions. He just "knows" that rail transportation is old, therefore, obsolete, and must yield to the new era.

He doesn't realize that the very existence of this nation, as we know it, depends upon the success of rail transportation, and that this nation is an experiment in transportation, the like of which never before existed. A great inland civilization such as ours could not have been developed and held together by rivers, canals and highways.

The railways saved us from the fate that befell all previous empires and peoples who tried to extend their governments over vast hinterlands, and it is one of the strangest, and most fortunate of coincidences that the railway came at a period when the United States reached the point of bitter need for it. By nature, our country had two great lines of cleavage. The Appalachian mountains separated the east from the fertile area lying westward. The most noteworthy of highways built across this mountain range in an attempt to prevent the west from breaking away from the east was the old National Pike, now largely restored for the use of motorists. The second natural division was the belt of prairie just east of the Rockies. The railway bridged all of nature's greatest barriers to expansion and trade, and is, in truth, the "tie that binds" this nation into a social and economic unit.

The public mind of this nation is in danger of forgetting that not only was our country economically created and developed by rail transportation, but that our very preservation and unity depends upon a sustaining of swift, reliable and far-reaching communication within our vast inland area which the railways make possible. No substitute for our railways is in sight.

Isn't it about time to supplement attempts at public education along the usual lines, by getting down to fundamentals which every man can understand, i. e., the security he desires for himself and his posterity, is basically dependent upon the very agency he innocently terms obsolete?

A. P. SCHRADER,

Assistant to Manager, Transportation Department,
Westinghouse Electric & Manufacturing Company.

Odds and Ends . . .

A Sweet Carload

Like most of the rest of us, the bees out in the vicinity of Ronan, Mont., have been working hard this year, and they have something to show for it. Proof of this was afforded the other day when a full carload of 36,000 lb. of strained honey was shipped out over the Northern Pacific to Spokane, Wash. This is said to have been the first carload of strained honey to be shipped from Montana to an out-of-state market, and also the first carload ever to be sent out by an individual bee-keeper.

Has Someone Beaten This Record?

One of the items in Ripley's latest "Believe It or Not" book tells about J. Johnson who, as engineman, ran the "Royal Scot", one of Great Britain's most famous trains, for a distance of 300 miles in 338 min. without a single stop. This record was made one day in 1927. While admitting that this is excellent performance, we cannot help believing that records equally good or even better have been made in this country. Can any of our readers offer proof that our national loyalty is not justified?

A Revenue-Producing Dining Car

The Norfolk & Western recently operated a diner in one of its fast freight trains, and, what is even more unusual, made money out of it. However, the car was not an ordinary railway diner. Instead, it was a lunchroom built to resemble a dining car, and it made a trip over the railway as a freight shipment, mounted on a flat car. These "diners" are large enough to accommodate 20 people at a time and are completely equipped with stoves, lunch counters, seats, show cases, dishes, cupboards, etc. Of solid steel construction, the "diner" is 40 ft. long, about 8 ft. in height and weighs 40,000 lb.

The Inevitable Lackawanna Item

Even if we wanted to, we should not be able to keep items about retired Lackawanna employees off this page. Their number and interest is sufficient to break down even the strongest editorial resistance. The most recent Lackawanna retirement news concerns Charles Adams, and if you have ridden on the Lackawanna Limited between Elmira, N. Y., and Scranton, Pa., during the past 14 years, you have placed your life in his capable hands, for he has been locomotive engineer on the Limited during that time. Mr. Adams began his railroad service as a locomotive fireman back in April, 1882, so that he retired with 50 years of continuous service to his credit.

One Less Wolf for Ontario Doorsteps

This is a pretty tall story but it appears to be true. The other day, Graham McLeod, fireman on the Algoma Central, captured a timber wolf with his bare hands during the course of his regular freight train run. Hemmed in by a cliff on one side of the track and a river on the other, the wolf was running down the right of way when McLeod first saw him. The dauntless fireman crawled out on the front end of the locomotive, and when the distance between pursuer and pursued had been reduced to nothing, he seized the animal by the tail. McLeod succeeded in getting back to the cab with the wolf, where he locked him up, but not before the wolf had retaliated by biting his fingers rather severely.

A Little Story of a Big Improvement

How things get started always makes an interesting story. One such yarn has just come to us from a friend who modestly asks that his name be withheld. One evening back in 1908, he relates, Max Schneider, chief mechanical engineer of the Pullman Company, expressed great indignation to a friend concerning an incident which had occurred in the men's washroom of a sleeping car on the Pennsylvania Limited. It seems that one of the other passengers, in cleaning his teeth at one of the wash basins, had made a rather revolting job of it. Quite

excited, Schneider exclaimed that he was going to do something about it. Shortly afterwards he told his friends he had solved the problem. He did it by developing the dental lavatory now in use on all Pullman cars.

The Southern Pacific's Old Kentucky Home

Prosperity came to Woodford County, Ky., the other day when the Southern Pacific turned over \$98,500 in franchise taxes. As is well known, the Southern Pacific, although it has no tracks there or even in adjoining states, maintains its corporate offices in Kentucky. The offices were recently moved from Anchorage, near Louisville, to Spring Station in Woodford County.

Record-Load Story to End Record-Load Stories

Every time this department publishes a story about some unusually large or exceptionally heavy shipment which some road has handled, one or more other railroads are sure to come forward with reports of shipments even larger or heavier. The most recent claimant for the honor of having moved the largest single item of freight is the Chicago, Milwaukee, St. Paul & Pacific. One day last month, it started out of Milwaukee, Wis., enroute to Kansas City and the Oklahoma oil fields, the largest single unit of freight ever moved on its lines. This was what is said to be the world's largest oil cracking vessel, built by the A. O. Smith Corporation of Milwaukee. The vessel has a length of 68 ft., and a diameter of 10 ft., while its walls are 3½ in. thick. Weighing 423,000 lb., it was moved on two 200-ton steel flat cars.

When Passengers Were Carried Free

The early days of railroading offer many interesting stories of the way in which railroad operation was carried on in spite of all obstacles. For instance, there is a story about how the Liskeard & Caradon, a little-known Cornish line, which is now a part of the railway system of the Great Western of England, at one time carried passengers free and, what is more, made money out of it. Although by Act of Parliament, the Caradon Company had power to convey passenger traffic, the road was never approved for this purpose by the Board of Trade. The lack of this formal approval, however, did not prevent the company from going after passenger traffic. It overcame the difficulty by issuing free transportation to all passengers but requiring them to pay for the transportation of their hats, walking sticks, umbrellas or what not. Doubtless, this story has a rather familiar ring to present-day railroad men who have witnessed the ingenious dodges which many carriers are resorting to in order to get a share of what little traffic there is available.

Boon to Commuters

The commuter on the New York, New Haven & Hartford no longer deserves designation as the country's leading candidate for the position of Forgotten Man. The New Haven management has recognized and ministered to a long-felt need by placing a cafeteria or "counter car" on the 7 a.m. train from New Haven to New York and on the train making the return trip from Grand Central terminal at 5:35 p.m. In the "counter car," breakfast-less commuters can get their bacon and eggs, toast and coffee, or almost anything else within reason, and consume them at leisure while riding to town. The car, which is a remodeled steel coach, has been sheathed with panelling inside, giving a beamed-ceiling effect. In the center of the car, on one side, is the kitchen with oil burning stoves and with a counter in front to which the customers go to give their orders and load up their trays. The car has a seating capacity of 53, the seats being deep-cushioned stools which are ranged around tables or in front of the longer tables which run lengthwise of the car. One feature of the interior decorating effect is 16 lamp shades, decorated with cartoons by George Clisbee, New York newspaper artist, which depict humorously the life of the commuter.

NEWS

Pinchot Advocates Lower Weight Limits for Trucks

Pennsylvania Governor discusses highway costs and use in letter to state executives

Gifford Pinchot, of Pennsylvania, has addressed a letter to the governors of the various states directing attention to the existing use of public highways and the present-day costs of construction and maintenance to meet this use. Discussing the situation as it relates to the State of Pennsylvania, Governor Pinchot's letter said in part:

"In Pennsylvania we are just now deeply interested in legislation that will protect the roads and add to the safety and convenience of travelers. The speed of heavy freighters is so great that roads are subjected to an impact difficult or impossible to withstand. In time any material subjected to such a strain, even steel, must fail.

"We are considering a possible reduction of the gross weight limit for heavy trucks. Under our present law that weight is 26,000 pounds. Our engineers believe that the people's road investment will be conserved if we fix a maximum of 20,000 pounds for four-wheel trucks and 28,000 for six-wheelers. They think, too, that a maximum length of 45 feet for truck and trailers is sufficient.

"It is true that the Association of Highway Officials recently agreed to a weight of 16,000 pounds per axle. But in Pennsylvania we believe that is much too heavy. My reasons for wanting lower maximum weights are:

1. We cannot properly budget our money for state highway construction until we know the type of road we must build. We cannot know that type until we know the maximum truck weight. These weights have increased in recent years. If they continue to increase, all the states must rebuild thousands of bridges, and thousands of miles of highways too. Until there is a definite limit of weights we cannot plan ahead.

2. We cannot build purely rural roads at reasonable costs if giant trucks are to use them. At present these roads are paid for mainly out of taxes on real estate, which in Pennsylvania are collected and spent by the localities and not by the state. The burden of the home and farm owner would be greatly lessened if the state took over the construction and maintenance of every possible mile of township road. That is impossible if the size of trucks is to keep on increasing.

3. We must consider also the safety of the roads. Huge trucks are dangerous. Heavy trucks get out of control, trailers break loose, and accidents occur when drivers of passenger cars stalled behind heavy trucks take a chance in passing.

4. The rights of passenger cars and light trucks should have first consideration in the planning and use of our highways because they concern far more people than great trucks. But we cannot afford to build both light type roads for automobiles and expensive roads for heavy freighters.

5. To build at public expense for competition against the railroads is not fair to corporations which bought, graded, built, and now maintain their own rights-of-way, and have long supported

public enterprises through taxes. Neither is it fair to investors in railroad securities. The decline of railroad earnings in recent years indicates that highway competition has been serious.

"Trucks can and should play a useful and important part in our transportation system without threat to others," Governor Pinchot continued, "and this is true not only as to general freight but as to flexible transportation by truck from the farm to the city. They can and should do so, however, without endangering either the long-haul business of the railroads or the safety and convenience of the motorists on our highways.

"For the foregoing reasons I believe the time has come to raise and settle the question of maximum truck weights in the light of the maximum use, safety and convenience to all our people."

Club Meeting

The Central Railway Club of Buffalo (N. Y.) will hold its annual meeting for the election of officers at the Hotel Statler, Buffalo, on Thursday afternoon, January 12, at 2 o'clock; and in the evening at the same hotel will hold its forty-fourth annual dinner. F. W. Rogers, freight agent of the Delaware, Lackawanna & Western, is chairman of the reservation committee, to whom should be sent orders for dinner tickets.

Canadian Railways Plan to Continue Pay Reduction

Canadian union chiefs from coast to coast, representing organized employees of the railways in the Dominion, have been informed by the companies that the 10 per cent wage reduction now in effect, will not be lifted on February 1, when the present agreement terminates.

It was understood that union leaders are preparing a memorandum in reply and are making preparations which will pave the way for a meeting with railway managements.

New York Central Accepts 25 Per Cent Increase

The New York Central has accepted the recommendation of the New York State Public Service Commission that its petition for authority to make an advance of 40 per cent in the rates for monthly commutation tickets to and from New York City be withdrawn. This leaves in force an increase of 25 per cent on monthly tickets and 20 per cent on school and 50-trip tickets, which increases were adopted by agreement, last June, in order to terminate the long-drawn-out hearings and controversies which, for nearly two years, had delayed decision on the company's application.

Estimated 1932 Net Put at \$324,000,000

Prospects for new year depend on business upturn, growth of competition

Continuation of the economic depression has enlarged and intensified the problems of the railroads, according to a new year statement authorized by R. H. Aishton, president of the American Railway Association and chairman of the Association of Railway Executives.

"In the matter of both traffic and earnings, the year 1932 has been as great a disappointment to the railways as to other lines of industrial effort. Preliminary reports, from the railways, which will not become complete for several weeks, indicate that loading of revenue freight in 1932 will total 28,100,000 cars, the lowest for any year since the tabulation of these reports began in 1918, and a reduction of 9,053,100 cars or 24.4 per cent under the total for 1931.

"Measured in net ton-miles, the volume of freight handled in 1932 will be, complete reports are expected to show, 257,000,000,000 net ton-miles, lower than for any year since 1909, and a reduction of 24.4 per cent under 1931.

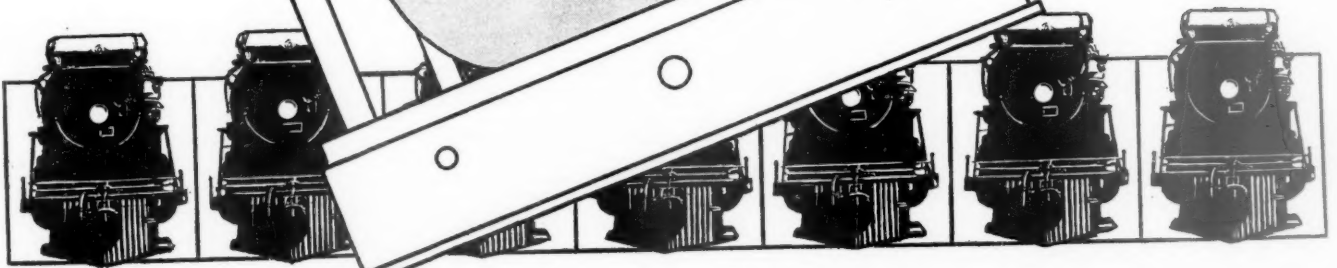
"Preliminary reports for the year show that the Class I railroads as a whole had a net railway operating income in 1932 of \$324,000,000 or a return of 1.21 per cent on their property investment. Class I railroads in 1931 had a net railway operating income of \$531,000,000, which was a return of 1.98 per cent on their property investment. Gross operating revenues in 1932 amounted to approximately \$3,150,000,000, a decrease of 25.6 per cent under those for 1931, while operating expenses amounted to \$2,419,000,000, a decrease of 25.9 per cent under the previous year.

"Net income, after fixed charges, disappeared in the railway industry in 1932. For the carriers as a whole, the aggregate net deficit was close to \$200,000,000. Some companies more than earned their interest and fixed charges during the year but more than 80 per cent of the mileage failed to do so. It is obvious that the railroads of the country, like nearly all other kinds of business, have suffered a severe depletion of revenues due to lack of business.

"The estimate of earnings for the twelve months of 1932 is based on complete reports for the first ten months and an estimate by the Bureau of Railway Economics as to earnings in November and December. The net railway operating income for the ten months period totaled \$266,-



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Carnegie scrapped one steel process after another, sometimes before the shine was off the million-dollar equipment. He was investing in greater future profits and a greater competitive advantage.

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Do not let the old locomotives waste the increasing gross. Buy new Super-Power and keep efficiency up to its present standard.



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295,000, compared with \$473,539,000 for the corresponding period in 1931.

"Passenger traffic in 1932 was less than for any year since 1900, amounting to 16,775,000,000 passenger miles. This was a reduction of 64.2 per cent under the record year of 1920.

"Prospects for rail traffic and revenues in the year 1933 depend in the main on the up trend of general business conditions. The degree to which competition by the unregulated commercial carriers operating for hire over the public highways and by water continue to grow will also have an important bearing.

"Any stimulation in business activity will almost at once be reflected in increased rail traffic and earnings, but if the railroads are to continue to meet adequately and efficiently, as they have been doing the commercial needs of the nation, it is essential that all agencies of transportation be given an equal opportunity to compete on a fair and equitable basis."

Shippers' Board Meeting

The Mid-West Shippers' Advisory Board will hold its ninth annual meeting at Chicago on January 5, while the Northwest Shippers' Advisory Board will meet at Minneapolis, Minn., on January 31. At the Mid-West board meeting, Samuel Hastings, president of the Illinois Manufacturers' Association will be the principal speaker.

Increased Erie Fares Tacitly Approved

The Interstate Commerce Commission announced on December 27 that it would not suspend rates which have been announced by the Erie to go into effect on January 1, increasing by 15 per cent the prices of commutation tickets to and from New York City. No reason was given for declining to take action. Protests had been filed by citizens of numerous towns and cities.

Low Coach Fares in the West

Railroads in the Western Passenger Association on January 1 will establish low coach fares equal to 51 per cent of the one-way fare and 54 per cent of the round-trip fare for a period of six months between certain points. One-way tickets will be good for one day after the date of purchase, while round-trip tickets will have a 15-day limit. The rates from Chicago to the Twin Cities will be \$9 for a one-way ticket and \$15 for the round trip, as compared with a \$14.62 standard one-way fare. From Chicago to Omaha, Neb., the rates will be \$11 for one way and \$20 for the round trip, as compared with a standard one-way fare of \$17.96. From St. Louis to the Twin Cities, the one-way rate will be \$15 and the round trip \$27, as compared with a standard one-way fare of \$20.74.

R. F. C. Lowers Interest Rate on Loans

A reduction of one-half of one per cent in the interest rate on loans from the Reconstruction Finance Corporation to railroads and financial institutions was announced by the corporation on December 24, to be effective on new loans authorized by the corporation for the period January 1 to June 30, 1933, and also on the outstanding balances of existing loans for the

same period. The reduction was decided upon "in view of the prevailing low rates for money." This reduces the rate on railroad loans from 6 to 5½ per cent and the rate to banks from 5 to 4½ per cent. Additional loans to railroads amounting to \$38,226,000 were authorized by the corporation during November, according to its monthly report. Up to October 31 the total loans authorized to 55 railroads had amounted to \$290,293,202.

New Equipment Installed

Class I railroads in the first eleven months of 1932 placed in service 2,951 new freight cars, the Car Service Division of the American Railway Association has announced. In the same period last year, 12,328 new freight cars were placed in service. The railroads on December 1 this year had 2,398 new freight cars on order compared with 4,252 on the same day last year.

The railroads also placed in service for the first eleven months this year 37 new locomotives compared with 123 in the same period in 1931. New locomotives on order on December 1 this year totaled three compared with 10 on the same day last year. Freight cars and locomotives leased or otherwise acquired are not included in the above figures.

Valuation Requirements Reduced

For the purpose of reducing the requirements on the railroads in complying with its valuation orders the Interstate Commerce Commission on December 19 issued the following orders pertaining to the modification, suspension and cancellation of valuation orders:

- (1) Revised Supplement No. 4 to Valuation Order No. 3, Second Revised Issue, effective January 1, 1933, superseding and canceling Supplement No. 4, effective January 1, 1928.
- (2) Revised Supplement No. 5 to Valuation Order No. 3, Second Revised Issue, effective January 1, 1933, superseding and canceling Supplement No. 5 effective July 1, 1928.
- (3) Revised Supplement No. 6 to Valuation Order No. 3, Second Revised Issue, effective January 1, 1933, superseding and canceling Supplement No. 6, effective January 1, 1930.
- (4) Revised Map Order, effective January 1, 1933, superseding and canceling the Map Order, so called, effective February 1, 1914, and Valuation Orders 5, 6 and 23, supplemental thereto.
- (5) Order to suspend Valuation Order No. 25, dated June 12, 1928.
- (6) Order to cancel Valuation Order No. 15, dated March 8, 1915.

Produce Shipments Smallest in Eleven Years

Rail and boat shipments of fresh fruits and vegetables this year were the smallest in 11 years, according to the Bureau of Agricultural Economics, U. S. Department of Agriculture. Market supplies thus moved will amount to 170,000 cars fewer than shipments in 1931, even should shipments this month equal those in December, 1931.

Shipments this year, up to December 1, totaled 785,086 cars. December shipments last year were 58,757 cars. The two figures give a projected total of 843,843 cars for this year, as contrasted with a total of 1,103,012 cars during the calendar year 1931. The 1931 shipments were 31,396 cars fewer than in 1930. The peak movement since 1922 was reached in 1929 with a total rail and boat aggregate of 1,066,400 cars. The reduced volume this year is attributed chiefly to curtailed consumer de-

mand and such low prices as to make it unprofitable for farmers to market produce, although some of the reduction in rail and boat shipments is due to heavier motor truck hauling of supplies to market.

Presidential Appointments Unconfirmed

As the result of the policy adopted by the Democratic leaders of the Senate not to confirm appointments made by President Hoover to federal offices which may be filled by Democrats after March 4, no action has been taken on the re-appointment of Commissioner E. I. Lewis of the Interstate Commerce Commission for a new term on the expiration of his present term on December 31. The nomination was sent to the Senate on December 8. The President at the same time re-appointed G. W. W. Hanger for a new five-year term as a member of the Board of Mediation and an effort was made to have this appointment confirmed in the Senate on December 23; but at the request of Senator Couzens it was referred to the committee on interstate commerce which was to consider it on January 2.

C. N. R. Net Increases

The net operating revenue of the Canadian National for the month of November, 1932, amounted to \$1,038,581, gross revenues having totalled \$11,742,329 and operating expenses \$10,703,747.

The operating expenses of the railway during the month were \$2,502,763 below those for November, 1931. For the eleven months of this year operating expenses were \$122,992,035, a reduction of \$33,378,539 from the 1931 figures.

Gross revenues for the month of November were \$3,548,664 below 1931 and for the eleven months the total was \$133,156,206, or \$30,706,368 under those of last year.

The net operating revenue of the Canadian National during the eleven months of 1932 amounted to \$10,164,170, an increase of \$2,672,171 over the net for the same period of 1931.

Passenger Committees Discuss Economies

Committees representing the eastern, western and southeastern carriers met in Washington on December 20 to discuss possible economies in passenger service, following the suggestion of Claude R. Porter, chairman of the Interstate Commerce Commission, that the railroads study the possibilities of lower rates, pooling of service and elimination of unprofitable trains. While the meeting discussed various problems, no definite action was taken. The meeting was preliminary to another to be held in January in Washington or New York.

In the absence of R. H. Aishton, president of the American Railway Association, L. W. Landman, general passenger traffic manager of the New York Central, acted as temporary chairman. As a result of the meeting, the Bureau of Railway Economics is making a study of the cost of passenger service and in particular whether it is a burden on freight transportation.

The committees selected to represent the

MAINTENANCE COSTS can be REDUCED

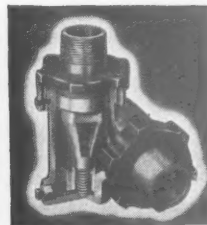
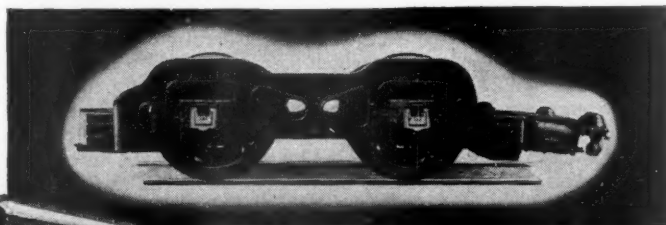
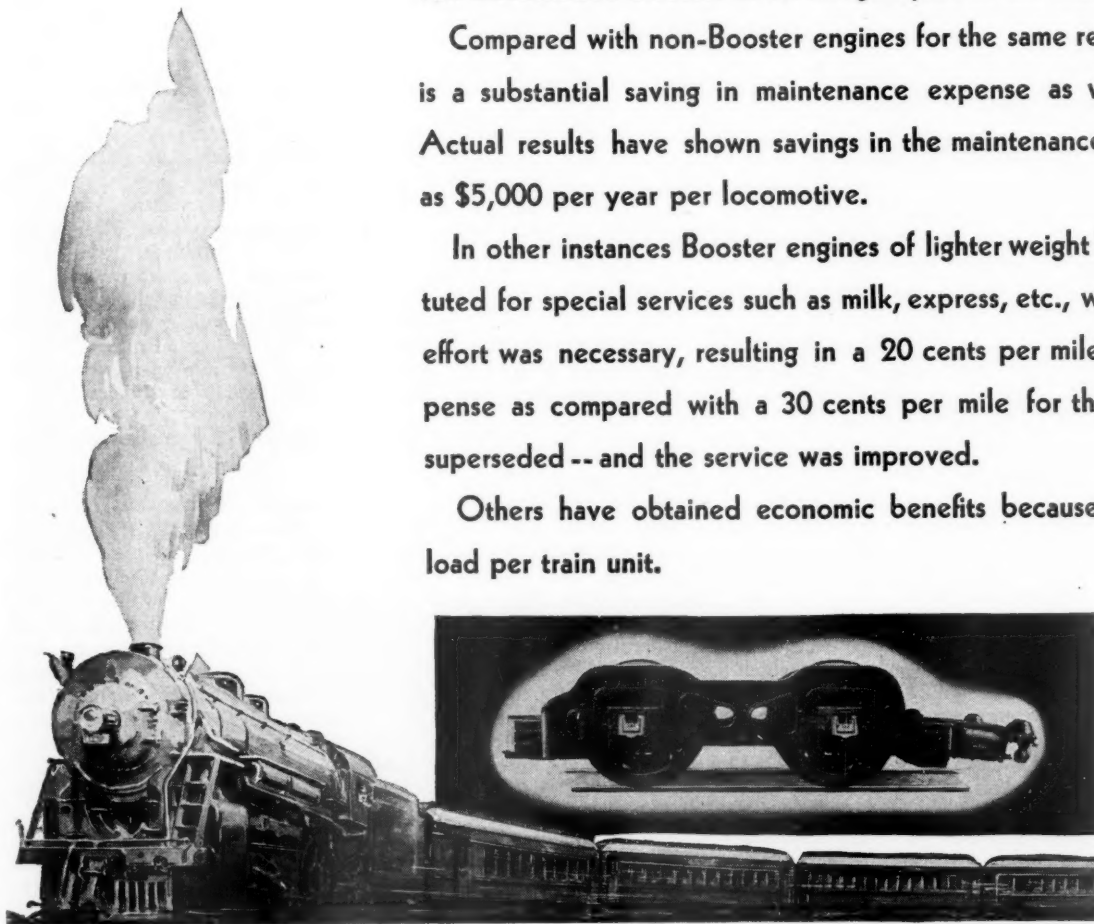
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When purchasing new locomotives for any service, determine the power requirements for both high and low speeds, then meet these requirements with an engine having the minimum weight on drivers, including The Locomotive Booster as an integral part of the design.

Compared with non-Booster engines for the same requirements, there is a substantial saving in maintenance expense as well as first cost. Actual results have shown savings in the maintenance expense as high as \$5,000 per year per locomotive.

In other instances Booster engines of lighter weight have been substituted for special services such as milk, express, etc., where high starting effort was necessary, resulting in a 20 cents per mile maintenance expense as compared with a 30 cents per mile for the engine which it superseded -- and the service was improved.

Others have obtained economic benefits because of the increased load per train unit.



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railroads in the study are as follows: For the eastern lines, Mr. Landman, J. L. Eysmans, vice-president of the Pennsylvania, and F. J. Wall, general traffic manager of the New York, New Haven & Hartford; for the western lines, A. Cotsworth, Jr., passenger traffic manager of the Chicago, Burlington & Quincy; W. J. Black, passenger traffic manager of the Atchison, Topeka & Santa Fe; and C. W. Strain, assistant passenger traffic manager of the Missouri Pacific; and for the southeastern lines, C. R. Capps, chief traffic officer of the Seaboard Air Line; C. McD. David, vice-president of the Atlantic Coast Line; and W. McN. Knapp, traffic manager of the Central of Georgia.

Summer Excursion Fares

Member railroads of the Transcontinental Passenger Association have authorized summer excursion fares between Chicago and the Pacific Coast for 1933 which will be approximately one and one-sixth the regular one-way fare. In addition to these regular summer tourist fares, which are good by way of either California or the Northwest and have a return limit of October 31, a 16-day limit rate of one fare plus 50 cents also has been authorized west of Chicago and the Mississippi river. The lower fare, however, does not permit routing by way of both California and the Northwest. The regular summer tourist rates as well as the 16-day limit rates will go into effect both eastbound and westbound on May 15. The low 16-day limit rate, which was provided especially for visitors to the Century of Progress Exposition in Chicago, will apply in both directions and from other points as well.

Canadian Employees Propose Waterway Toll

Postponement of the St. Lawrence waterway project until more prosperous times and the imposition of tolls on vessels using that waterway when constructed, were urged upon the Canadian Government for consideration, by a delegation representing "ship-by-rail" associations in Ottawa last week. Establishment of a system of tolls, on a tonnage basis, applicable to vessels using the Welland Canal, was also proposed.

The deputation was received by Sir George Perley, acting Prime Minister, and Hon. R. J. Manion, Minister of Railways and Canals. The former, in replying to the representations made, referred to the fact that Canada has already completed the Welland Canal, an important link in the Great Lakes to the sea project. This would result in reducing to about \$38,000,000 the capital cost which Canada would have to bear when the St. Lawrence development was put through.

A statement issued after the discussion follows in part:

"The members of the deputation represented that the proposed construction of the St. Lawrence waterway would involve a heavy capital burden on Canada and result in competition with the railways which would further aggravate their present difficulties. They therefore requested the federal government to consider:

"1. The possible postponement of the development of the St. Lawrence waterway

until such time as the prosperity of the Dominion warranted such development.

"2. That in the event of the St. Lawrence waterway being completed, tolls be levied on a tonnage basis on vessels using the waterway that will be commensurate with the amount of money expended, similar to the tolls now charged for the use of the Panama and Suez canals, which are recognized as being self-supporting.

"3. That a system of tolls, on a tonnage basis, be inaugurated on vessels operating through the Welland canal."

P. J. Farrell Elected Chairman of I. C. C.

Pursuant to the policy adopted January 13, 1911, Commissioner Patrick J. Farrell has been elected chairman of the Interstate Commerce Commission, effective January 1, for the ensuing year. He succeeds the present chairman, Commissioner Claude R. Porter.

On the day that Mr. Farrell assumes the duties of chairman he will finish his thirty-second year with the commission. He was the commission's first chief examiner, the first solicitor of its Bureau of Valuation, and the first chairman of its Board of Reference. On February 12, 1918, he was promoted to the office of chief counsel and he occupied that position until June 7, 1928, when he became a member of the commission by virtue of an appointment by President Coolidge to succeed former Commissioner Esch.

Before coming to the commission Mr. Farrell was a resident of Newport, Vt., where he practiced law as a partner of former Commissioner Prouty under the firm name of Prouty & Farrell, and prior to that time he had held several positions on what was then the Connecticut & Passumpsic Rivers Railroad. He began his railroad life as a billing clerk and afterwards occupied the positions of station agent, conductor of freight and passenger trains, and train despatcher. He also worked in the general freight office of the railroad company.

Moffat Bonds Declared Valid

The \$8,750,000 issue of Moffat tunnel supplemental bonds was declared valid by the Colorado supreme court on December 19, when Justices Burke, Butler, Campbell and Moore joined in the majority finding against Chief Justice Adams and Justices Hilliard and Alter, who contended the bonds should be held illegal. Actually the court did not decide the case upon its merits, but merely held that it is bound by the decision of the federal circuit court of appeals, which has declared the bonds valid.

The suit attacking the legality of the supplemental bonds was brought by the Denver Land Company in the Denver district court on June 23, 1928, and was based upon the fact that the tunnel commission had issued \$15,470,000 of bonds when the tunnel law only authorized a sum not to exceed \$6,720,000. On October 6, 1928, District Judge Robert G. Smith held the bonds legal. This decision was set aside by the Colorado supreme court on January 20, 1930. The supreme court held the district court was without jurisdiction because no bondholder was a party to the suit. The case was remanded with instructions to make bond-

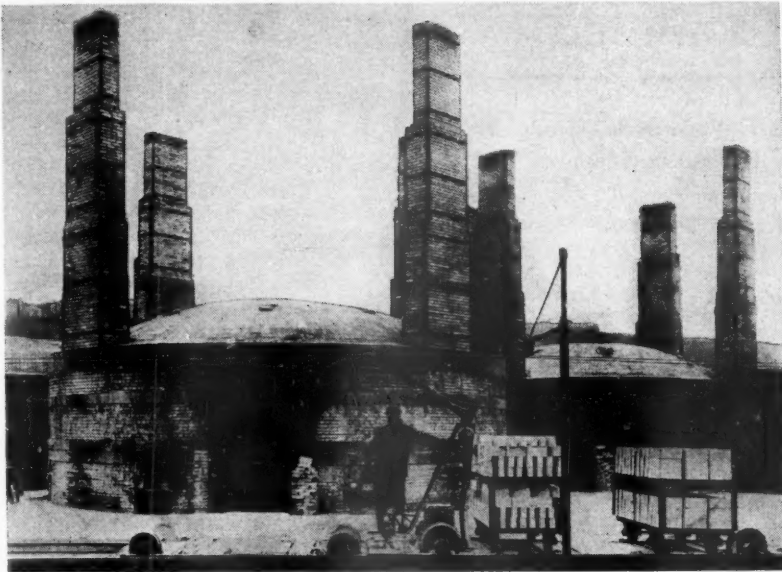
holders parties defendant, or show cause why this should not be done. This order was complied with and on June 26, 1931, District Judge L. V. Holland held the bonds valid. Again the Denver Land Company appealed to the state supreme court. On August 19, 1930, bondholders started what is known as the Boynton case in the federal district court to have the supplemental bonds declared valid. The federal court held the state court had jurisdiction and dismissed the case. The bondholders appealed to the federal circuit court of appeals which reversed this ruling and held the supplemental bonds valid.

Additional Fourth Section Relief Granted on Pacific Coast Rates

On petition of the railroads the Interstate Commerce Commission has issued a further modification of its fourth section orders of September 17, 1931, in which it authorized the roads to reduce rates between California points and points in Oregon and Washington to meet water competition, without reducing the intermediate rates. The modifications are intended to liberalize the relief granted by the former orders by reducing the minimum rate requirements and by extending the relief to additional points, including those on certain short lines, and to rates via the new Great Northern-Western Pacific route. One of the conditions of the previous order was that the commodity rail rates should be no lower than to yield minimum carload revenue of 6 mills a ton-mile where the carload minimum weight is 40,000 lb. or over, and 12 cents a car-mile where the carload minimum is under 40,000 lb. The railroads requested a modification so as to grade down the minimum car-mile revenue for the lighter-loading commodities and the minimum ton-mile revenue for the heavier loading commodities, supporting their request by cost studies. The modified order establishes minimum rates of 12 cents a car-mile where the carload minimum is under 40,000 lb. and over 24,000 lb.; 11 cents a car-mile where the carload minimum is 24,000 lb. and over 15,000 lb., and 10 cents a car-mile where the carload minimum is 15,000 lb. and under.

Differential Rail-Barge Cotton Rates Prescribed

The Interstate Commerce Commission, Division 4, has ordered the railroads connecting with the line of the American Barge Line Company on the Mississippi and Ohio rivers to join with the barge line, on or before January 25, in the establishment of additional through rates by barge-and-rail routes on cotton between points in Arkansas and Memphis, Tenn., on the one hand and points in Pennsylvania, New York, New Jersey, Massachusetts, Rhode Island, and Connecticut, on the other hand, on the basis of differentials under the all-rail rates somewhat less than the usual differentials applied to such rates. The order was issued on application of the barge line company, which had asked for differentials of 9, 10 and 11 cents, respectively, per hundred pounds, depending on the minimum weights; but the commission has prescribed a differential of only 6 cents from Memphis, with a minimum weight of 37,500



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GOOD Arch Brick is the foundation of a satisfactory locomotive Arch. Realizing this the American Arch Company, after a survey of the brick resources of the country, picked the following manufacturers from which to supply the railroads:

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lb. per car, and differentials of 4, 6 and 8 cents from Arkansas points. The 4-cent figure applies on minima of 50,000-80,000 lb.; the 6-cent figure on minima of 35,000-55,000 lb., and the 8-cent figure on minima of 25,000-40,000 lb. The through rates are based on the reduced rates put into effect by the railroads about September 1, which were further reduced by them in November, to meet the competition of unregulated truck and water carriers. Because they are regarded as depressed rates, the southwestern rail carriers contended before the commission that they should not be required to join in the rates proposed by the barge line, stating that their all-rail rates are experimental, to expire July 31, and were published only in an endeavor to retrieve traffic lost to unregulated forms of transportation. It was further contended that the establishment of the rates sought would be a source of disadvantage to many producers and consumers of cotton in the South and Southwest. All the rail carriers concerned also urged that the applications should not be acted upon except after hearing. The barge line company contended that its proposed differentials were consistent with the usual formula since they approximate 20 per cent of a theoretical all-rail rate from Memphis to Pittsburgh arrived at by reducing the present Memphis-Pittsburgh any-quantity rate proportionately to the difference between the carload and any-quantity rates to the East.

The commission says that under the law the differentials must be such that the joint rail-and-water transportation shall be upon terms reasonably fair to both rail and water carriers, not designed to divert traffic from one or the other, but to reflect differences in cost and value of service. The differentials it prescribed are somewhat greater than those recently agreed upon by the southwestern lines and the Inland Waterways Corporation for application between Memphis and New Orleans.

Commissioner Mahaffie dissented, taking the position that the commission should hold hearings in order to be able to decide the matter intelligently. He pointed out that the all-rail rates involved are about 50 per cent of what the commission has held to be reasonable maximum rates.

EFFECTIVE NOVEMBER 26, BRUCE THOMAS, K. C., was appointed president of the Railway Rates Tribunal of Great Britain, succeeding Sir Walter B. Clode, K. C., who has retired after ten years of service. This appointment, according to an announcement by the Secretary to the Ministry of Transport, was made by His Majesty the King on the joint recommendation of the Lord Chancellor, the president of the Board of Trade and the Minister of Transport, under the terms of Section 20 of the Railways Act of 1921.

Sir Walter Clode was originally appointed president of the rates tribunal in November, 1922, and has held office since that date. Mr. Thomas, who succeeds him, was called to the bar in January, 1912, and is a member of the Middle Temple. He has had long experience at the Parliamentary Bar and has practiced before the Railway Rates Tribunal and the Railway and Canal Commission.

Foreign

Fred Lavis Reports on Transport in Dominican Republic

The establishment of an organization, regulated to some extent, but not operated, by the government, which will control all public transportation agencies, is recommended for the Dominican Republic by Fred Lavis, consulting engineer, in his recent report on transportation in that country. Mr. Lavis' investigation, which was made at the request of the Dominican President, was concerned particularly with the possibility of co-ordinating rail and highway operations.

Because the set-up of transport facilities—rail and highway—in the Dominican Republic is relatively simple, the problems attending the growth of motor carrier competition with the railways and those of bringing about effective co-ordination, which are now encountered in virtually every country, may there be seen in their fundamentals. Mr. Lavis has presented such a picture and he reaches the conclusions in his report that "the railways should be maintained and placed in a position to be self-supporting and able to maintain adequate and efficient service;" and that the main highways should be maintained but that their use by trucks should be carefully restricted. Mr. Lavis suggests that "the only way this can be effectively done" is through the establishment of the transport organization mentioned at the outset.

The Dominican Republic is situated on the Island of Haiti which lies between Cuba and Puerto Rico. Mr. Lavis points out that it is an agricultural country, producing raw materials and commodities for export. The Republic, in turn, purchases abroad manufactured goods which are brought in through its various ports and distributed throughout the interior. Thus, Mr. Lavis continues, the general strategy of the development of transportation is to produce a system which will best and most economically convey the products of the interior to the coast for shipment to their markets abroad and carry the imports from the ports to the interior.

Broadly speaking the principal producing area is in the North-Central part of the country and for many years the main lines of communication between this region and its foreign markets were the rail lines to Puerto Plata, a seaport on the North coast and Sanchez on the East coast. The former is served by the Central Dominican, a 60-mile line owned by the Dominican government, and the latter by the Samana & Santiago, an 86-mile line owned by a British company.

In 1922 an improved highway was completed between this producing area and Santo Domingo, the capital city of the Republic, which is located on the Southern coast. Truck routes between the producing area and Santo Domingo sprung up until, as Mr. Lavis says, "the earnings of the railways have been so reduced that they show an annual operating loss and unless a remedy for this be found it seems almost inevitable that they must suspend operation." Gross revenues of the Sa-

mana & Santiago have declined from \$700,000 for 1919 to \$170,000 a year at present and operating losses have been reported for the past five years. The Central Dominican reported a gross revenue of \$280,000 in 1928 and \$100,000 in 1931. Meanwhile, trucking rates, in Mr. Lavis' opinion, have been forced below the cost of operation.

In view of this situation, and having in mind the need for preserving the railways to serve the ports of Puerto Plata and Sanchez and the desirability of maintaining the main highway in order to facilitate communication between the capital city and the country's principal producing area, Mr. Lavis makes his recommendation that all public transport services be operated by one company in the affairs of which the government will have at least a regulatory voice. Pending the consummation of such a co-ordinating plan Mr. Lavis recommends for the present that "every possible measure be taken to restrict trucking on the highway" between the producing area and Santo Domingo. Such restrictions, he continues, would be only palliatives but he thinks that they might relieve the difficult situation on the railways while the more permanent transport policy is being developed.

New Zealand Licenses Commercial Highway Operators

All commercial services operated for the carriage of freight by highway in New Zealand will be required to be licensed after December, 1932, under regulations of the Transport Licensing Act of 1931, according to reports received by the Department of Commerce. A freight service is defined in the act as any service by motor vehicle for the carriage or haulage of goods for hire or reward, unless the service is such that it is carried on entirely within the boundaries of a single borough or town district. The following services are to be brought under control by licensing: (a) Services operating for at least 15 miles on a main highway; (b) services operating between the boundaries of any two boroughs or town districts, provided that these boundaries are more than 15 miles apart, measured along the shortest available public road. Highway passenger carriers have been licensed under the act since March of this year.

The Commerce Department also reports that the New Zealand government is considering the establishment of a centralized transport control authority to co-ordinate the work now being done by the Transport Department, the Railways Board, the Public Works Department, the Marine Department, the Main Highways Board and a large number of local bodies. This proposed board, which would decide major questions of the Dominion's transport policy, would be composed only of experts with specialized knowledge of the problems involved. They would be responsible to Parliament through the Minister of Transport, and would have power to formulate and enforce a transport policy for the entire Dominion. They would deal not only with land and water transport, but with air transport; would have due regard for the existence of capital equipment that must be utilized or wasted, and would plan for the future as well as the present.



With best wishes
for a Merry Christmas
and a Happy
Prosperous New Year

American Locomotive Company
30 Church Street New York N.Y.

Supply Trade

The general offices of the **Waugh Equipment Company**, Depew, N. Y., have been combined with the executive offices at 420 Lexington avenue, New York City.

George M. Hunter, operating manager, Pittsburgh district, of the **American Bridge Company**, has been appointed vice-president in charge of manufacturing operations, with headquarters in the Frick building, Pittsburgh, Pa.

John M. Mulholand, until recently vice-president in charge of sales for the O. F. Jordan Company, East Chicago, Ind., has become associated with the **Youngstown Sheet & Tube Company**, Youngstown, Ohio, as special representative of railroad sales, with headquarters at Chicago.

J. Elmer Gougeon, formerly vice-president and sales manager of the *Railway Review*, at New York, and later special representative of the **Simmons-Boardman Publishing Company**, has become associated with the **Geo. A. Post Company, Inc.**, as vice-president with headquarters at 75 West street, New York.

Curtis G. Green has been appointed district sales manager of the St. Louis, Mo., office of the **Standard Steel Works Company**, Burnham, Pa. Mr. Green has been associated with the Standard Steel Works since 1920 and connected with its St. Louis office since 1929. Prior to that time he was attached to the Houston, Tex., office.

George C. McMullen has become associated with the **Tyson Roller Bearing Corporation**, Massillon, Ohio, as manager of industrial sales. Mr. McMullen was for 15 years with the **Timken Roller Bearing Company** and had previously been associated in manufacturing and engineering activities with the **Timken Detroit Axle Company** and the **Crane Motor Car Company**.

OBITUARY

George M. Bard, chairman of the board of the **Barco Manufacturing Company**, Chicago, died in that city on December 21.

Edwin M. Herr, Vice-Chairman of Westinghouse Electric, Dies

Edwin M. Herr, vice-chairman of the board of directors of the **Westinghouse Electric & Manufacturing Company**, died on December 24 at his home in New York, after an illness of several months. Mr. Herr was born on May 3, 1860, at Lancaster, Pa. He was educated in the public schools at Lancaster and Denver, Colo. About 1876, while still in school, he was employed as messenger and operator by the **Western Union Telegraph Company**, and then served as telegraph operator on the **Kansas Pacific** (now a part of the **Union Pacific**) later becoming station agent at Deer Trail, Colo. In 1881, he

entered the **Sheffield Scientific School** of **Yale University** and was graduated in 1884 with the degree of Ph.B. He later served in the office of the mechanical engineer of the **Chicago, Burlington & Quincy** at **Aurora, Ill.**, and then as a mechanical draftsman, subsequently becoming successively engineer of tests, superintendent of telegraph and finally division superintendent of that road. In 1891 he was appointed division master mechanic of the **Chicago, Milwaukee & St. Paul** (now the **Chicago, Milwaukee, St. Paul & Pacific**) and left that work two years later to go to the **Grant Locomotive Works** as general superintendent at Chicago. In 1894 he was appointed general manager of the **Gibbs Electric Company**, Milwaukee, Wis., and on the dissolution of this company shortly thereafter, Mr. Herr went to Europe to study foreign railroad practice. On his return to America he re-entered railroad service and in 1895 was appointed assistant



Edwin M. Herr

superintendent of motive power of the **Chicago & North Western**; a year later he became superintendent of motive power of the **Northern Pacific**. Mr. Herr was appointed general manager of the **Westinghouse Air Brake Company**, at **Wilmerding, Pa.**, in 1898, remaining with that company until 1905 when he was elected first vice-president of the **Westinghouse Electric & Manufacturing Company**, and when that company entered a receivership in 1907 Mr. Herr served as one of the receivers and general manager. About a year later when the company was reorganized Mr. Herr resumed his former position with the company and in 1911 he was elected president, resigning this position in June, 1929, to become vice-chairman of the board. During his management of the company its business increased from about \$20,000,000 annually to approximately \$200,000,000 annually. During a visit to Japan in 1920, Mr. Herr was decorated by the Emperor of Japan with the Order of the Rising Sun in acknowledgment of his co-operation in training Japanese students at the works of the **Westinghouse Company**. Mr. Herr had always been interested in educational matters and devoted much of his time in developing an educational system for employees of the company. He was a member of the **Yale (University) Corporation** and had served on the committee in charge of finance of

that institution. Mr. Herr, in addition to being a member of a number of clubs, was a director of the **American Manufacturers' Export Association**, **Radio Corporation of America**, **Westinghouse Air Brake Company**, **Westinghouse Electric & Manufacturing Company** and various other organizations.

Equipment and Supplies

LOCOMOTIVES

THE MANUFACTURERS RAILWAY is inquiring for one oil-electric locomotive of 1,600 hp. This locomotive is to have a total weight in working order of 140 tons.

FREIGHT CARS

WABASH.—The receivers of this road have been authorized to retire and dismantle 4,350 units of obsolete and worn-out rolling stock. The equipment includes 3,874 freight cars, 36 passenger coaches, 50 locomotives and 390 other working units that have been in service 28 years or more. In the report to the court, the receivers estimated that it would cost \$3,000,000 to rebuild and modernize this equipment. They also estimated that this rolling stock has a salvage value of \$296,450, and that it will cost \$87,180 to dismantle it.

PASSENGER CARS

THE MISSOURI PACIFIC is asking for prices on the conversion of seven dining cars into lounge cars.

SIGNALING

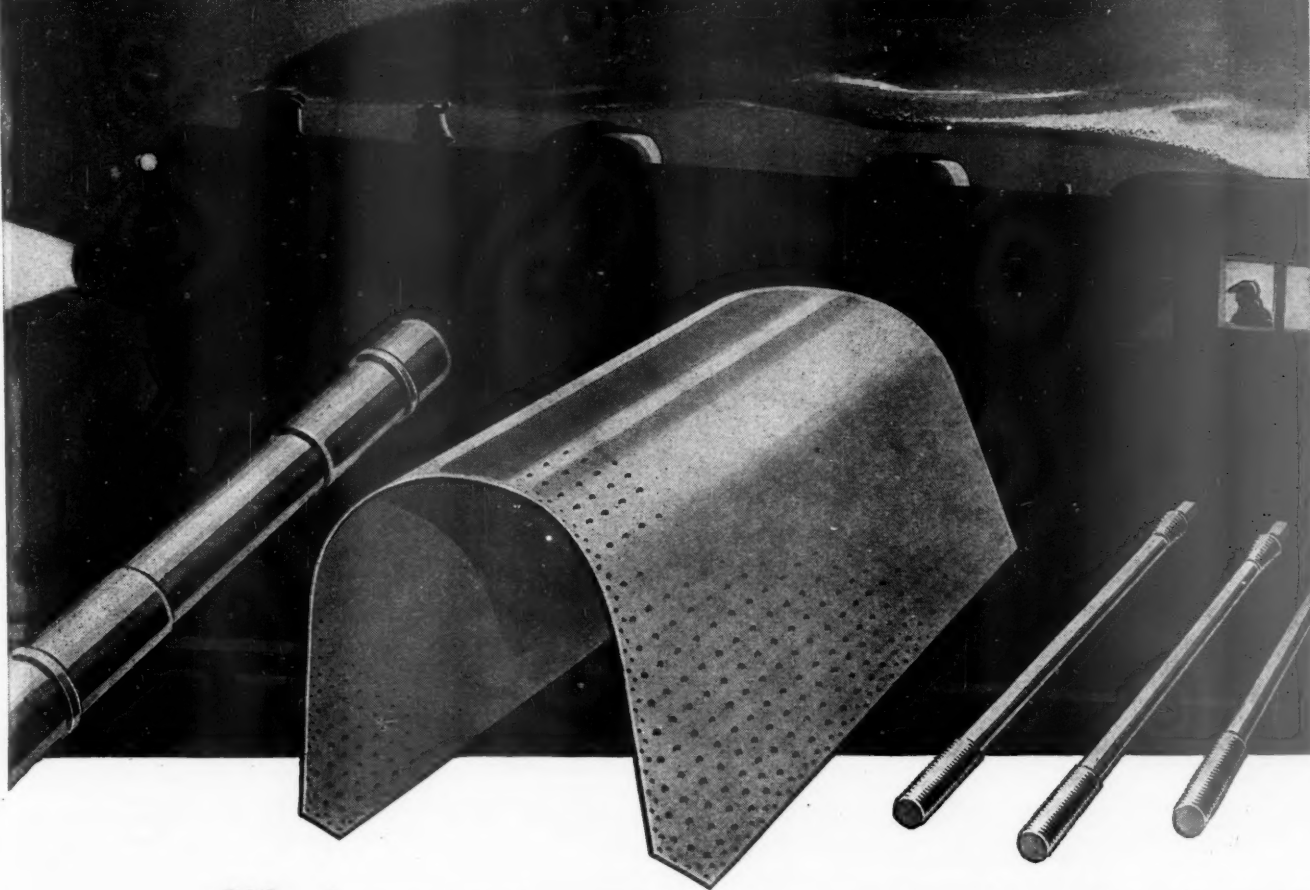
THE PENNSYLVANIA has ordered from the **Union Switch & Signal Company**, materials for an electro-pneumatic interlocking at **Valley Stream, Long Island**; 35 levers. This interlocking is to replace several temporary installations now in use in connection with extensive changes in grade due to elimination of crossings.

Construction

NORTHERN PACIFIC.—A contract has been awarded to the **Puget Sound Bridge & Dredge Company** for the removal of this company's bascule bridge across the West waterway at **Seattle, Wash.**, at a cost of \$34,000.

ARMORITE.—A four-page insert for its mechanical goods catalog on the subject of "Armorite" has been published by the **B. F. Goodrich Rubber Company**, Akron, Ohio. **Armorite** is a soft, elastic black rubber for use as a protector to chutes, hoppers and other surfaces exposed to the abrasion of wet or dry materials, such as ore, sand and gravel, etc.

BETTER MATERIALS IS ONE WAY TO LOWER MAINTENANCE



WHEN, every two years, you spend on repairing a locomotive one quarter of its original cost, the materials you use are worthy of careful consideration. « No longer is steel just steel, to be used indiscriminately for all purposes. Years ago Republic metallurgists began the developments that have led to special analysis steels for particular railroad services. « An alloy steel gives new toughness to axles and protects against failures due to shocks at low temperature; side sheets of Toncan Iron resist corrosion and fire-cracking; alloy staybolts combine toughness and corrosion resistance—and so on thru all the uses of steel in railroad equipment. « For each, Republic has a maintenance-reducing material that will help lower the major item of operating expense.

Toncan Iron Boiler Tubes, Pipe, Plates, Culverts, Rivets, Staybolts, Tender Plates and Firebox Sheets • Sheets and Strip for special railroad purposes • Agathon Alloy Steels for Locomotive Parts • Agathon Engine Bolt Steel • Agathon Iron for pins and bushings • Agathon Staybolt Iron • Climax Steel Staybolts • Upson Bolts and Nuts • Track Material, Maney Guard Rail Assemblies • Endura Stainless Steel for dining car equipment, for refrigeration cars and for firebox sheets • Agathon Nickel Forging Steel.

The Birdsboro Steel Foundry & Machine Company of Birdsboro, Penna., has manufactured and is prepared to supply under license, Toncan Copper Molybdenum Iron castings for locomotives.

C E N T R A L A L L O Y D I V I S I O N

REPUBLIC STEEL
C O R P O R A T I O N
MASSILLON, OHIO



Financial

ATCHISON, TOPEKA & SANTA FE.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon two lines of the Oklahoma Central, which it operates under lease, from Lehigh, Okla., to Ada Junction, 39.88 miles, and from Byars Junction to Purcell, 21.11 miles.

BALTIMORE & OHIO.—Bond Maturity.—This company has extended until January 9 the date of expiry of its offer to holders of its 4½ per cent convertible bonds due March 1, 1933, by the terms of which holders of such bonds are to receive 10 per cent in cash upon presentation, 50 per cent in 5 per cent refunding and general mortgage, series F bonds, due 1996, and 40 per cent additional in cash on maturity. The company announces that holders of more than 84 per cent of the bonds have accepted the plan, but that substantially all must do so if the plan is to be made effective.

CENTRAL OF GEORGIA.—Protective Committee.—Under the chairmanship of H. W. George, vice-president of the Metropolitan Life Insurance Company, a committee has been formed to represent the interests of holders of the following securities of this company:

First Mortgage 5% Bonds due 1945
First Mortgage, Macon & Northern Division, 5% Bonds due 1946
First Mortgage, Mobile Division, 5% Bonds due 1946
First Mortgage, Middle Georgia & Atlantic Division, 5% Bonds due 1947
First Mortgage, Oconee Division, 5% Bonds due 1945
Chattanooga Division Purchase Money Mortgage 4% Bonds due 1951
Consolidated Mortgage 5% Bonds due 1945
Refunding & General Mortgage, Series "B," 5½% Bonds due 1959
Refunding & General Mortgage, Series "C," 5% Bonds due 1959
Equipment Trust Certificates, due 1933 to 1940
Central R. R. and Banking Co. Collateral Trust 5% Bonds due 1937
Chattanooga, Rome & Southern R. R. Co. First Mortgage 5% Bonds due 1947

The committee does not ask for the deposit of these securities and announces its intention of acting in consultation with the receiver.

CHARTIERS SOUTHERN.—Tentative Recapture Report.—Division 1 of the Interstate Commerce Commission has issued a tentative recapture report finding that this company earned \$538,965 in excess of 6 per cent in the years 1923 to 1926, inclusive.

DENVER & RIO GRANDE WESTERN.—R. F. C. Loan.—This company has applied to the Reconstruction Finance Corporation for an additional loan of \$2,500,000 to pay taxes, interest, and equipment obligations.

DETROIT, TOLEDO & Ironton.—Tentative Recapture Report.—Division 1 of the Interstate Commerce Commission has issued a tentative recapture report finding that this company in the years 1923 to 1926 earned \$3,887,684 in excess of 6 per cent on the value of its property and directing it to pay one-half that amount into the general railroad contingent fund by January 30 unless a protest is filed. The report finds that during 1921, the first year the carrier was operated by the Ford interests, the

officials received \$49,746 as salaries but that they were increased during the succeeding years to \$106,947 in 1927. In addition the company paid \$70,100 in 1926 and \$53,700 in 1927 to the Ford Motor Company for services rendered by its officials. Stating that it was without information as to the reasonableness of these payments the commission tentatively finds that they were unreasonable and disproportionate and correspondingly increased the net railway operating income for recapture purposes.

MISSOURI PACIFIC.—Control of Northeast Oklahoma.—The Interstate Commerce Commission has reaffirmed its denial of authority to this company to acquire the Northeast Oklahoma, an electric line.

MISSOURI PACIFIC.—R. F. C. Loan.—This company has applied to the Reconstruction Finance Corporation for an additional loan of \$4,300,000 for the purpose of paying taxes to the amount of \$1,900,000; \$600,000 on equipment trust certificates, and \$1,800,000 of interest. The company has already received four loans totalling \$17,100,000.

MONONGAHELA.—Tentative Recapture Report.—Division 1 of the Interstate Commerce Commission has issued a tentative recapture report finding that this company in the years 1920 and 1924-1927 earned \$2,406,970 in excess of 6 per cent on its valuation and directing it to pay one-half that amount into the recapture fund unless a protest is filed by January 30.

MURFREESBORO-NASHVILLE.—R. F. C. Loan.—The Interstate Commerce Commission has approved a loan of \$25,000 to this company from the Reconstruction Finance Corporation.

NATCHEZ, COLUMBIA & MOBILE.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Northfield, Miss., to Tilton, 29.6 miles.

NEW YORK CENTRAL.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon its branch line from Westfield, N. Y., to Ulysses, 14.6 miles.

NORFOLK SOUTHERN.—Abandonment.—The receivers have applied to the Interstate Commerce Commission for authority to abandon the Columbia branch from Mackeys, N. C., to Columbia, 23 miles, and the Oriental branch, from Bridgeton, N. C., to Oriental, 26 miles.

PENNSYLVANIA-READING.—Merger of South Jersey Lines.—A series of applications for authority for a merger of the south Jersey lines of the Pennsylvania and Reading systems, to be operated by the Atlantic City Railroad, of which two-thirds of the stock would be held by the Pennsylvania and one-third by the Reading, were filed with the Interstate Commerce Commission on December 17, pursuant to an agreement dated November 23 between the Pennsylvania, the Reading, the Atlantic City, and the West Jersey & Seashore. The applications state that the continued development of automobile, bus, and truck transportation in this territory has

diverted traffic and rendered the continuation of duplicate service and facilities by the two railroads unnecessary and that it involves wasteful expenditures which it is proposed to eliminate by a co-ordination of the service of the two systems and the abandonment of unnecessary lines. The Pennsylvania asks authority to acquire control of the Atlantic City, which is the Reading's subsidiary operating lines between Philadelphia and Atlantic City and elsewhere in southern New Jersey, by purchase of two-thirds of its stock for the nominal sum of \$1. The Atlantic City asks authority to assume the Pennsylvania's lease of the property of the West Jersey & Seashore, which has lines paralleling those of the Atlantic City, and to operate the combined properties. The Pennsylvania and the Reading jointly ask authority to guarantee the obligations under the lease. The Atlantic City asks authority to abandon 33 miles of lines and the West Jersey & Seashore asks authority to abandon 45 miles of its lines, leaving one main line between Philadelphia and Atlantic City. The Atlantic City, the Wildwood & Delaware Bay Short Line, and the West Jersey & Seashore also ask authority for the construction of several short pieces of connecting track or connections to industries and the Atlantic City asks authority to operate under trackage rights over the line of the United New Jersey into Camden.

ST. LOUIS-SAN FRANCISCO.—R. F. C. Loan.—The receivers have applied to the Reconstruction Finance Corporation for an additional loan of \$3,000,000 to pay taxes and payments on equipment obligations.

SOUTHERN PACIFIC.—Bonds.—The Interstate Commerce Commission has authorized this company to assume liability as guarantor for \$4,056,000 of first mortgage, 4 per cent bonds of the San Antonio & Arkansas Pass, the bonds to be pledged as collateral security for short term notes.

UNION PACIFIC.—Abandonment.—The Interstate Commerce Commission has denied the application of this company for authority to abandon a branch line extending six miles from Grass Creek Junction to a coal mine.

Average Prices of Stocks and of Bonds

	Dec. 27	Last week	Last year
Average price of 20 representative railway stocks..	22.10	23.82	30.15
Average price of 20 representative railway bonds..	54.58	56.56	64.52

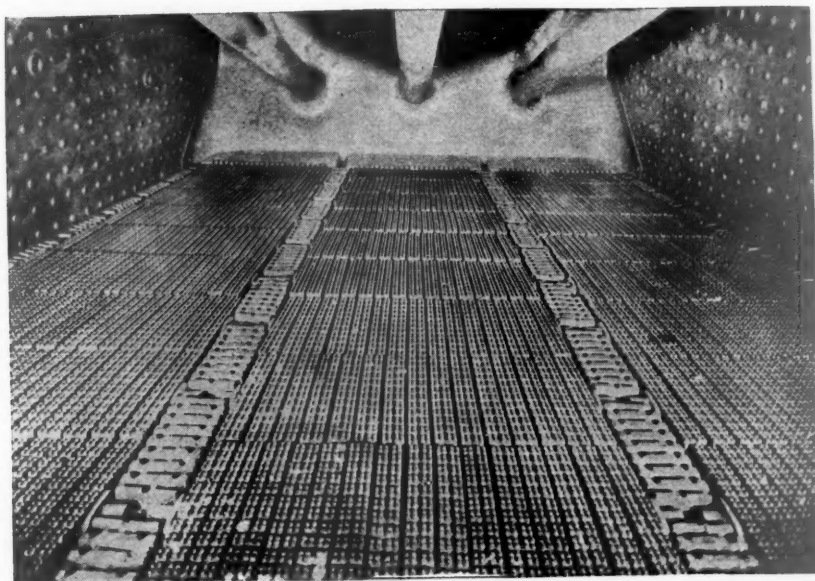
Dividends Declared

Elmira & Williamsport.—Preferred, \$1.61, semi-annually, payable January 3 to holders of record December 20.
Hudson & Manhattan.—Preferred, \$2.50, semi-annually, payable February 15 to holders of record February 1.
Kansas City Southern.—Preferred, \$.50, quarterly, payable January 16 to holders of record December 31.
Philadelphia & Trenton.—\$2.50, quarterly, payable January 10 to holders of record January 1.
Reading Company.—Common, \$.25, quarterly, payable February 9 to holders of record January 12.
Richmond, Fredericksburg & Potomac.—\$2.00, semi-annually; Dividend Obligation, \$2.00, semi-annually, both payable December 31 to holders of record December 19.

Continued on next left-hand page

FIREBARS . . . PROVIDE

THE MOST EFFICIENT PLATFORM ON WHICH TO BURN COAL..



AND ARE THE MOST FORWARD STEP SINCE
THE ADVENT OF THE LOCOMOTIVE

Over 300,000,000 locomotive miles operation in passenger, freight and switching service have established Firebar superiority over round hole, slotted and finger grates.



- Less fuel consumption
- Less maintenance
- Less smoke
- Less plugging of flues
- Less time required to dump fires
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Railway Officers

EXECUTIVE

W. F. Turner, president of the Spokane, Portland & Seattle, with headquarters at Portland, Ore., has retired, and **Charles Donnelly**, president of the Northern Pacific, and **W. P. Kenney**, president of the Great Northern, have been elected president and vice-president respectively of the Spokane, Portland & Seattle, which is owned jointly by the Northern Pacific and the Great Northern; these positions on the S. P. & S. will be alternated annually between presidents of the Great Northern and Northern Pacific.

A. D. MacTier, vice-president of the Eastern lines of the Canadian Pacific, has retired from active service. Mr. MacTier was born in Blairgowrie, Scotland, on December 27, 1867, and received his education at Cargilfield, Edinburgh, Scotland, and Sedburgh, Yorkshire, England. He entered railroad service in 1887, as stenographer in the office of the general baggage agent and general superintendent of the Canadian Pacific. In 1889, he was appointed assistant to superintendent of sleeping and dining cars. In 1891, he became connected with the stores and fuel department, and in 1896, he was appointed general baggage agent. In 1899, Mr. MacTier was appointed general fuel agent, and in 1907 assistant to vice-president. In 1913, he became general manager, and in 1918, he was elected vice-president, Eastern lines, with headquarters at Montreal, Que., which duties he now relinquishes to retire, and which position will be abolished.

PURCHASES AND STORES

G. M. Betterton, assistant purchasing agent on the Southern Pacific, Pacific Lines, with headquarters at San Francisco, Cal., has been appointed to the newly-created position of purchasing agent with the same headquarters, in which position he will assume the duties of **Frank W. Taylor**, general purchasing agent of the Pacific Lines, who will retire effective January 1.

Mr. Taylor has been connected with

railway purchasing and stores work for 47 years. He was born at Campobello, N. B., on August 5, 1867, and entered railroad service in December, 1885, as a chairman on the Union Pacific at Laramie, Wyo. After a short period of service in the engineering department, he became a clerk in the stores department at Laramie and was later advanced to chief clerk and to division storekeeper at that point and at Pocatello, Idaho, on the Oregon Short Line. In 1907, Mr. Taylor was promoted



F. W. Taylor

to general storekeeper of the Oregon Short Line, with headquarters at Pocatello, where he remained until 1911, when he was appointed general purchasing agent of the Pacific Electric, with headquarters at Los Angeles, Cal. He was appointed purchasing agent of the Southern Pacific at San Francisco in 1917, which position he held until 1930, when he was advanced to general purchasing agent.

ENGINEERING AND SIGNALING

Frederick J. Taylor, district engineer on the Northern Pacific, with headquarters at St. Paul, Minn., will retire, effective January 1, after 46 years of continuous service with this road. Mr. Taylor was born on December 30, 1862, at West Chester, Pa., and was educated at Swarthmore College. He entered the service of the Northern Pacific in June, 1886, as a transitman, and served in various positions in

the engineering department until 1903, when he was appointed division engineer at Livingston, Mont. In 1919, Mr. Taylor was advanced to district engineer, with the same headquarters, where he remained until 1930, when he was transferred to St. Paul.

C. D. MacKintosh, assistant district engineer of the Manitoba district and division engineer of the Winnipeg terminals of the Canadian Pacific, with headquarters at Winnipeg, Man., has been appointed division engineer, with headquarters at Kenora, Ont., to succeed **J. C. Chisholm**, who has been transferred to Saskatoon, Sask., to replace **J. V. McNab**. As noted in the *Railway Age* of December 24, Mr. McNab has been appointed district engineer of the Saskatchewan district, with headquarters at Moose Jaw, Sask., to succeed **J. R. C. Macredie**, deceased. **C. H. Scott**, engineer of water service, with headquarters at Winnipeg, has had his duties extended to include those of assistant district engineer of the Manitoba district and division engineer of the Winnipeg terminals.

OPERATING

G. N. Slade, superintendent of ore operations for the Northern Pacific at Superior, Wis., has been appointed superintendent of the Duluth (Minn.) Union Depot Company and assistant superintendent on the Northern Pacific at Duluth, to succeed **F. L. Birdsall**, who will retire, effective January 1, after 36 years of service with the Northern Pacific.

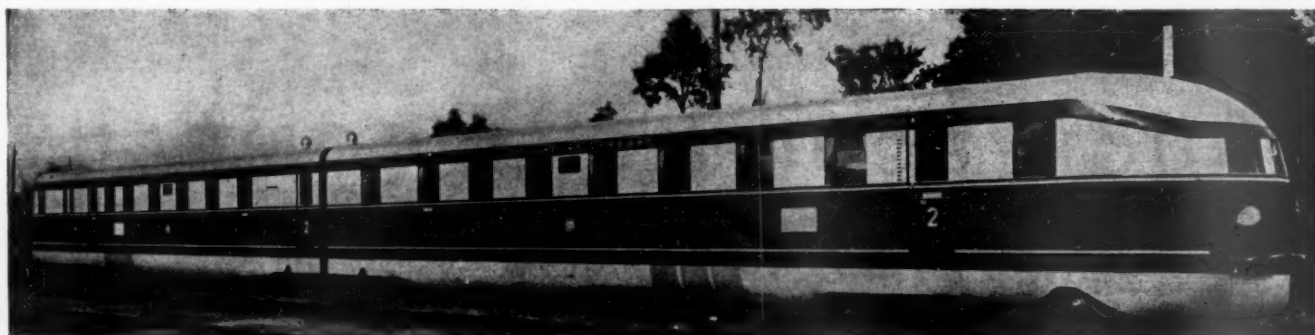
OBITUARY

L. C. Hartley, who retired in June, 1931, as chief engineer of the Chicago & Eastern Illinois, died on December 15 at Chicago.

W. J. Quinlan, district passenger agent of the Canadian National, with headquarters at Winnipeg, Man., died on December 14, following a stroke. He was 49 years of age.

C. B. Squire, formerly general passenger agent of the Pennsylvania, died at Wilton, Conn., on December 24, at the age of 75 years. Prior to his connection with the Pennsylvania, Mr. Squire had also served as general passenger agent of the Santa Fe.

* * * *



A Streamlined Rail Motor Car Now Being Tested by the German National Railroad Company

This new type of rail motor car, which the German Railroads expect to put into service between Berlin and Hamburg during the early part of 1933, is said to be capable of attaining a speed of 93 m. p. h. It is now being equipped with two Maybach Diesel motors of 410 hp. each at the Maybach Motor Works in Friedrichshafen, Germany, and experimental runs have already been made with one motor. Outwardly, the new car presents an unusual appearance; projecting parts have been done away with wherever possible to reduce air pressure, running gear has been enclosed almost down to the roadbed, and the usual buffers with round, flat faces have been replaced by pointed fenders.

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